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PASQUOTANK RIVER BASIN

POLLUTION SURVEY REPORT

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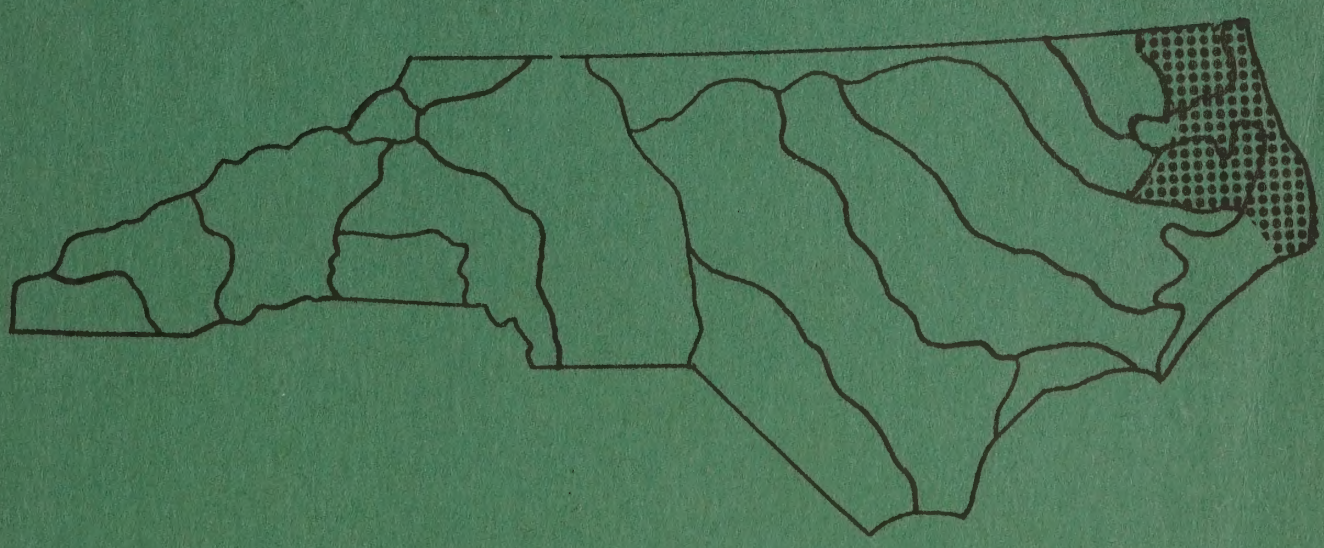

NORTH CAROLINA
STATE STREAM SANITATION COMMITTEE

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STATE DEPARTMENT OF WATER RESOURCES
DIVISION OF STREAM SANITATION AND HYDROLOGY
RALEIGH

POLLUTION SURVEY
REPORT NO 8

THE PASQUOTANK RIVER BASIN

A study of existing pollution in the Pasquotank River Basin together with recommended classifications of its waters.

1957

STATE STREAM SANITATION COMMITTEE

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DIVISION OF STREAM SANITATION & HYDROLOGY
RALEIGH, NORTH CAROLINA

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INTRODUCTION

A survey of the surface waters of the Pasquotank River Basin was made and this report has been prepared to fulfill the requirements of Section 143-215 of Article 21 of the General Statutes of North Carolina. The area covered by these studies includes the drainage area of Abemarle Sound extending from the eastern boundaries of the Roanoke River and Chowan River Basins to the Outer Banks, Currituck Sound, Roanoke Sound, Croatan Sound, and Pamlico Sound southward to a line running from Sandy Point to the northeastern tip of Ocracoke Island; the entire drainage areas of North River, Pasquotank River, Little River, Perquimans River, Yeopim River, Scuppernong River, and Alligator River; and all minor tributaries, canals, bays, inlets and lakes tributary to the above-mentioned streams and bodies of water, exclusive of those portions lying within the State of Virginia. It should be noted, however, that it was necessary to locate two sampling stations within the latter State in order to determine the quality of water entering North Carolina. This area is shown on Map entitled "Pasquotank River Basin". For convenience, the basin is described in the report in a counter-clockwise direction around Albemarle Sound beginning with Currituck Sound.

The data on which this report is based have been developed through actual laboratory studies of existing stream conditions, engineering surveys of municipal and industrial water supplies and waste treatment facilities, from information obtained from existing files, conferences with persons well acquainted with the area, and visits to the sites under study. Data covering stream flow and drainage areas were furnished by the North Carolina District Office, Geological Survey of the United States Department of Interior, under terms of a cooperative agreement between that office and the State Stream Sanitation Committee. Other Federal, as well as State, County, and Municipal Agencies have been of considerable assistance in furnishing data regarding land and stream uses.

The laboratory studies on the Pasquotank River Basin were begun in June 1957 with the laboratory based at the Elizabeth City Water Plant and continued until October of the same year. Following the stream study, the data herein were compiled.

The report presents information about stream conditions, usage of water resources in the basin, sources from which pollution is discharged into these waters, and pollution prevention measures prevailing during the period of study, together with recommended classifications for the waters of the basin.

During these studies and preparation of this report, a sincere effort has been made to present a true picture of the complex water pollution problems within the basin. Likewise, a conscientious effort has been made toward developing reasonable conclusions and recommendations pertaining to the recommended classifications for the various waters in this area. It is hoped that this report will be useful to all concerned with the problem of safeguarding the water resources of the Pasquotank River Basin.

ACKNOWLEDGEMENT

The valuable cooperation and assistance of those agencies and individuals which have contributed to the Pasquotank River Basin studies and the preparation of this report are gratefully acknowledged.

Special recognition is given to the officials of industries and municipalities throughout the basin who furnished data relative to plant operation, waste discharges and treatment facilities employed. Recognition is also given to the City of Elizabeth City for furnishing space and utility services for the mobile laboratory unit based there during the period of the stream study.

Federal and State Agencies from which cooperation and assistance were obtained included the Geological Survey of the United States Department of Interior; the United States Department of Agriculture, Soil Conservation Service; the State Board of Health; the North Carolina Department of Conservation and Development, Commercial Fishery Division and Commerce and Industry Division; the North Carolina Wildlife Resources Commission, and the North Carolina State Highway and Public Works Commission. Assistance was also rendered in many instances by Municipal Utility Departments; County Health Departments; County Agriculture Agencies; and other agencies and individuals interested in preserving and developing our water resources. Their assistance is hereby acknowledged.

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SUMMARY

This report has been prepared to fulfill the requirements of Section 143-215 of Article 21 of the General Statutes of North Carolina.

The area included within the Pasquotank River Basin centers around Albemarle Sound and encompasses approximately 3,799 square miles within the State of North Carolina of which some 1,100 square miles are covered by water. It includes those portions of the watersheds lying within the State of seven principal rivers, two large creeks, all of three sounds, and portions of two sounds. The Basin is bounded on the West by the Roanoke and Chowan River Basins, on the South by the Tar River Basin, on the East by the Atlantic Ocean, and on the North by the State of Virginia. The above-mentioned bodies of water are as follows: Albemarle Sound, Currituck Sound, North River, Pasquotank River, Flatty Creek, Little River, Perquimans River, Yeopim River, Kendrick Creek, Scuppernong River, Alligator River, Croatan Sound, Roanoke Sound, and Pamlico Sound north of a line extending from Sandy Point to the northeast tip of Ocracoke Island. North Landing River, Northwest River, both tributary to Currituck Sound, and the Dismal Swamp Canal section of the Intracoastal Waterway, tributary to the Pasquotank River, are interstate streams which enter the State of North Carolina from the State of Virginia. The estimated population in the Basin in 1950 was 64,000.

Water uses in the Basin include bathing and other forms of recreation, shellfishing, commercial and sport fishing, stock watering to some extent, disposal of domestic sewage and industrial waste, and navigation.

There are no public or industrial surface water supplies located within the Basin. This is due primarily to the high salt content which makes the water untreatable at the present time for human consumption, due to the high cost of using present known methods of treatment, and harmful for most industrial purposes. While the water in the upper extremities of the main rivers, where there are considerable quantities available due to natural storage in the stream beds, is reasonably free from a high salt content at times, the effect of wind tides on the three, large unprotected sounds made it impossible to predict the extent of the salt water intrusion and thus precludes a reliable water supply from these sources. Accordingly, the population has to rely upon ground water for both domestic and industrial purposes at the present time. In this connection, three municipalities and five military establishments were utilizing ground water from wells supplying an estimated population of 27,000 with some 2.000 MGD at the time of the stream study. In addition, one military establishment, then under construction, had made available a supply of 0.250 MGD for future use. Since that time, construction activities have been stopped at this military establishment, while two have been either deactivated or placed on a standby basis. These three establishments thus could serve a total population of 4,900 with 0.454 MGD. Industry was found to be using an undetermined quantity of water from ground sources.

The stream studies showed that there were 11 significant sources of pollution within the Basin at the time these studies were made and one proposed source at a military establishment, which has yet to materialize, exclusive of malfunctioning school waste disposal systems and wastes from fish processing plants. Of these 11, only one provided and now provides secondary treatment.

In this connection, the U. S. Navy Communication Facility at Buxton discharges 0.025 MGD of waste with a population equivalent (P.E.) of 213 to the treatment plant from which the effluent seeps into the sandy soil. In effect then, this waste is not a source of pollution to either Pamlico Sound or the Atlantic Ocean. Primary treatment, with chlorination of the effluent, was provided for the wastes from three military establishments which had a flow of 0.205 MGD with a P. E. of 2,414 before treatment and a P. E. of 1,569 after treatment. This represented a reduction of pollution from these three establishments of 35%. As noted above, the waste from one military establishment has never materialized and since the time of the stream studies two such establishments have been either deactivated or placed on a standby basis. An abattoir discharged industrial waste with a flow of 6,000 GPD to a small stream without treatment other than that provided by an ineffective grease trap. As a result, there was no apparent reduction in the strength of this waste which had a P. E. of 364. The remaining six sources of pollution discharged untreated sewage and industrial waste into various streams with a volume of 1.634 MGD and a P. E. of 22,166. The 11 active sources of pollution at the time of the stream studies had a total volume of 1.870 MGD and a P. E. of 25,157 before treatment and discharged to the various streams a P. E. of 24,099 after treatment. This represents a reduction in pollution by treatment of but 4%. Since the stream studies were conducted, one military establishment has been deactivated, while one has been placed on a standby basis for military purposes. In this connection, the sewage treatment plant still serves some 50 military personnel and a population of 150 in a nearby housing development. The net result of these activities has been a reduction in pollution reaching the Basin waters.

CONCLUSIONS

The Pasquotank River Basin is unique in that some 29% of its area is covered by water which, on the one hand, adds materially to the economy of the area through its fisheries and recreational facilities and by providing a means of transportation, while on the other hand, much of the water has such a high salt content as to prevent its use for domestic and most industrial purposes and for irrigation. Although most of the Basin waters, comprising the sounds and their tributaries, are free from pollution, the following conclusions, based upon a careful review of this report, indicate that the full potential of these waters for their most beneficial uses cannot be realized until the polluted waters are protected by appropriate action by those responsible for the present unsatisfactory conditions and undue pollution is prevented in the future:

1. The largest factor presently contributing to the economy of the Pasquotank River Basin is agriculture, including lumber and pulpwood operations. While most of these activities are located north of Albemarle Sound, there are valuable farm lands south of the Sound where the lowlands when drained have been found to contain a rich and highly organic soil as found north of the Sound. In this connection, an increasing effort is being made to reclaim lowlands south of the Sound for farming in recent years. Very little irrigation is practiced at the present time and the water so used is derived from shallow wells; however, it is proposed that where surface waters have a low salt content and are otherwise apparently suitable for this purpose a classification will be assigned to protect this usage, except in one minor instance where a small tributary to Knobbs Creek is highly polluted by industrial waste.

2. Commercial fishing and shellfishing activities are important factors contributing to the economy of the Basin, although it has not been practicable to establish a dollar value upon these activities. While this is so, the fishing industry is unstable as it has both good and bad seasons. Pollution below Elizabeth City, Hertford, and Columbia affect in some measure the commercial fishing waters of the Pasquotank, Perquimans, and Scuppernong Rivers respectively. Shallowbag Bay is polluted by sewage from Manteo. The waters suitable for the propagation and harvesting of shellfish for human consumption are free from pollution except in minor instances. It appears advisable that no shellfish be taken for human consumption from the small canal adjacent to the old ferry slip at Manns Harbor on Croatan Sound, the waters of Roanoke Sound immediately adjacent to Pond Island, Mill Creek at Wanchese which is tributary to Roanoke Sound, Stumpy Point Bay on Pamlico Sound if found unsuitable by the State Board of Health when they investigate this Bay in the summer of 1960, and, of course, the closed area in Shallowbag Bay.

3. There is no heavy industry in this Basin as found in most of the river basins of the State. Other than the fishery industries, present industry such as textile and lumber is found largely in the Elizabeth City area. As noted previously in the report, numerous small manufacturing industries are found in the Basin but they employ only a small number of people. The slow development of industry is attributed in considerable measure to the small labor supply, the scarcity of raw materials, and the lack of large quantities of suitable water, due to the presence of salt in the larger bodies of surface water. The full potential of ground water development, based upon reconnaissance by the U. S. Geological Survey some years ago, does not appear to have as yet been realized. Only full exploration of the Basin area will give the true picture. Ground water is presently obtained from relatively shallow wells in large measure, with limitations on the yield of individual wells and with controlled

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pumping to prevent the intrusion of salt water into the fresh water formations. The Federal Government is conducting research as to ways and means of producing fresh water from both salt and brackish water. If a method is found to produce fresh water from these sources at reasonable cost, the industrial development of this area should gain impetus.

4. Recreation presently adds greatly to the economy of the Basin and with pending and planned improvements to the transportation systems, recreation will increasingly add to the growth and well being of the whole Basin, and to that of "The Outer Banks" in particular. The opportunities for recreation in this Basin are numerous. Sport fishing may be found in the inland waters, sounds and inlets, along the Ocean front, and in the Gulf Stream. Boating and water skiing are popular in inland waters, while bathing is gaining in the inland waters, the sounds, and along the 85 miles of Ocean beaches. In short, this Basin has possibly the greatest tourist attractions of the Coastal regions of the State. While most of these waters are free from pollution, the bathing areas in the Pasquotank River below Elizabeth City and those in the Perquimans River below Hertford are exposed to public health hazards due to the discharge of untreated sewage and waste from these municipalities and in the case of the Pasquotank River, the discharge of untreated sewage and industrial waste from U. S. Coast Guard installations. The untreated sewage from Manteo creates a health hazard to the individuals who use Shallowbag Bay for water skiing. The ocean waters are as yet unpolluted; however, as the population increases along "The Outer Banks", the high water table will increasingly create difficulties in the operation of private sewage disposal systems and a hazard to bathing in the ocean waters. Private water systems will also become polluted.

5. In order that the above beneficial uses of water or their potential uses may be adequately protected, both industries and municipalities should provide adequate treatment facilities for their wastes wherever required. In addition, others who create local nuisance conditions or health hazards should take appropriate action. In this connection, the populated communities along "The Outer Banks" should begin to plan now for both adequate water systems and sewage collection and treatment facilities.

6. The recommended classifications, as shown in Table 8, should be adopted and the applicable water quality standards maintained for the protection of the "best usage" being made of the waters now or contemplated in the foreseeable future.

THE SURVEY

Before a study of natural stream conditions could be conducted, a systematic survey was made of the water and land uses throughout the Basin. Investigation of all sources of significant pollution, public, semi-public, and industrial, were included in the survey in order to determine the points of waste discharge and the loadings placed upon the receiving streams. This involved the determination of the volume and characteristics of each significant waste, either treated or untreated, being discharged into the waters of the Basin. Pertinent information was obtained from management, such as the use of toxic materials and taste and odor producing substances in manufacturing processes, as a guide to the collection of samples for special study. The collection of this voluminous data resulted from numerous field investigations and conferences with individuals familiar with the Basin, industrial personnel, and Municipal, County, State, and Federal Officials representing water use, health, agriculture, recreation, and wildlife agencies. These data are listed in Tables No. 2, 3, 4, 5, 6, and 8. The analytical results obtained from stream studies are listed in Table No. 7.

Sampling Stations and Procedures

The survey included a program of stream sampling over the entire Pasquotank River Basin, including all of the sounds, bays, inlets, major rivers and their tributaries, and the smaller tributaries considered significant to the overall study. This program involved the establishment of sampling stations at public bathing places and various points where there were concentrated fishing and shellfishing activities. Particular emphasis was placed on those streams receiving appreciable quantities of either sewage or industrial waste; however, sampling stations were also established on streams free from sources of pollution in order to ascertain background information relative to normal water quality in given areas. Wherever possible, sampling stations were located both above and below sources of pollution. When necessary, several sampling stations were located below a source of pollution in order to determine the point of maximum oxygen depletion, and the point of full oxygen recovery. In some cases, full recovery had not been obtained before the streams received more pollution and suffered further degradation. The sampling stations established in the Pasquotank River Basin are listed in Table No. 1, together with other pertinent information.

Samples were collected at points of water use, or below points of pollution, after the wastes discharged had a reasonable opportunity for dilution and mixture with the receiving waters. In each case, every effort was made to obtain as representative a sample as possible. Special equipment was utilized to collect stream samples in conformity with standard procedures. The collecting devices are designed to prevent aeration of samples intended for dissolved oxygen and biochemical oxygen demand (BOD) determinations. Apparatus and chemical reagents in appropriate field kits were used by the field crews for the determination of routine tests, such as those for dissolved oxygen and water temperatures. Physical features of streams, such as flow and weather conditions, were recorded at the time of sampling.

Sampling and field testing operations were conducted in accordance with procedures and methods outlined in "Standard Methods for Examination of Water, Sewage, and Industrial Wastes", Tenth Edition, published by the American Public Health Association, the American Water Works Association, and the Federation of Sewage and Industrial Wastes Associations.

Hydrological Measurements

In order to obtain accurate flow data for the most pertinent sampling stations at the time the samples were taken, the field crews worked with the Raleigh Office of the Water Resources Division, Surface Water Branch of the United States Geological Survey. This was made possible by a cooperative program between the two offices. It was extremely difficult to obtain accurate flow measurements, due to the wind tide effect on most of the streams in the Basin. Actual measurements were made only on the Pasquotank and Perquimans Rivers. The measurements on the Pasquotank River were made at South Mills, which is 36.9 miles from its mouth, while the measurements on the Perquimans River were made at Belvedere which is 23.9 miles from its mouth. A temporary reference point was installed at each of these sites and the water stage was measured at these and at certain inflow stations at the time of sampling. The flow at various stages was actually measured by use of a current meter and these flows were used to make a rating table for the particular station. Other flows were taken from this table. Measurements were also made at selected sites by the float method which were supplemented by inflow measurements made on tributary streams. The float measurement is made simply by timing a float of proper weight over a length of stream of which the cross-section is known. A total of 17 temporary reference points were located at various sites to obtain information regarding tidal action and stream flow.

Laboratory Tests and Their Significance

When sampling a stream, certain tests must be made. These include dissolved oxygen, temperature, and observations connected with sight and smell. Other tests are run in a mobile laboratory and by the State Laboratory of Hygiene in Raleigh. These tests include pH, alkalinity, hardness, chlorides, BOD, MPN of coliform bacteria, true color and turbidity, and such other determinations as may be required. The analytical results from these tests are found in Table No. 7.

As a background for presentation and discussion of laboratory data, certain rules and regulations were adopted by the State Stream Sanitation Committee for use in classifying and assigning standards of quality and purity to designated waters of the State. For each class of water designated, there are accompanying standards of water quality and purity that are applied thereto. These classes for fresh waters are "A-I", "A-II", "B", "C", "D", and "E", and for tidal salt waters "SA", "SB", "SC", and "SD". A brief explanation of these classes will be found in the table listing recommended stream classifications.

Under certain conditions, it is necessary to make special tests for specific substances, such as toxic materials; however, in the discussion which follows, the requirements for stream waters for various uses are considered in terms of the laboratory tests usually made. As far as practicable, and applicable, all chemical and bacteriological examinations were made in accordance with "Standard Methods for Examination of Water, Sewage, and Industrial Wastes", Tenth Edition, as described above. The routine determinations, together with a brief discussion of each, are as follows:

Temperature - The temperature of stream waters is useful in indicating the solubility of gases in it, and hence the saturation level of dissolved oxygen, the effect of biological activities, and the effect of viscosity on

sedimentation. The level of dissolved oxygen varies inversely with the stream temperature being lower at higher temperature and vice versa.

Temperature has a marked influence on the rates of natural purification due to biological activity, which are greater at higher temperatures up to about 140°F, and diminish at lower temperatures. As temperature rises, viscosity decreases with a resulting increase in sedimentation, provided other factors do not interfere.

Turbidity - Turbidity is an index of the suspended matter in a sample and is measured by comparison of a sample with a standard suspension of "Fullers Earth".

True Color - While the apparent color of water is due both to suspended and dissolved matter, the true color is due only to substances in solution. For the purpose of this study, the true color was determined by removing the suspended matter from each sample by centrifugation and determining the color of the supernatant with the aid of an electric colorimeter. The colorimeter was standardized against a series of standard potassium chloroplatinate solutions made up in accordance with "Standard Methods for the Examination of Water, Sewage, and Industrial Wastes", Tenth Edition.

pH Value - The hydrogen-ion concentration of water expressed as pH is a measure of intensity factors of its acidity or alkalinity. Water having a pH of 7.0 is considered neither acid nor alkaline. Higher values indicate the presence of alkaline earth salts, and lower values the presence of acids or acid salts. In North Carolina the pH of most of the streams, unaffected by sewage or industrial waste, will vary from 6.0 to 7.5. For normal fish life, the pH range should be within the limits of 4.3 to 8.5.

Alkalinity - The alkalinity of natural water represents its content of carbonates, bicarbonates, hydroxides, and sometimes borates, silicates and phosphates. It is measured by titrating with a standard acid solution to certain standard hydrogen-ion concentrations. The results are expressed in parts per million (ppm) of calcium carbonate. Within normal limits, the alkalinity and hydrogen-ion concentration have little sanitary significance, but they are of value in handling industrial wastes and in controlling the various waste treatment processes.

Hardness - The hardness of natural water consists largely of calcium and magnesium, although measurable concentrations of iron, alumimum, manganese, strontium, and zinc in some waters must be taken into consideration. Hardness is expressed in ppm as calcium carbonate and is a measure of the soap consuming capacity of water. While the hardness of water has no sanitary significance, extremes may indicate the presence of certain types of industrial waste, or intrusion of salt water. It also has value in the study of the effects of toxic waste.

Chloride (Cl) - The determination of chloride in water or waste is for the purposes of defining the presence or absence of salt. It is expressed in ppm in terms of the Cl ion. Normal fresh waters are low in chloride and excessive amounts may indicate the presence of sewage or certain types of industrial waste. Water containing chloride in excess of 250 ppm is usually unsatisfactory for public water supply purposes, because of the salty taste, and may indicate the intrusion of salt water. The presence of large amounts of chloride in brackish or salt water is significant in the solubility of

oxygen, as the level of dissolved oxygen in such waters varies inversely with its chloride content.

Dissolved Oxygen (D.O.) - Dissolved oxygen represents the amount of oxygen dissolved in the water. This is one of the most valuable analytical measurements of the condition of a given water. Water is saturated when it contains as much oxygen as it can hold and unsaturated when it does not contain as much. Under certain conditions, the water can become supersaturated. In relatively clean streams, the dissolved oxygen content tends to remain at or near saturation. Dissolved oxygen is essential to natural purification of streams, as well as maintenance of fish and other aquatic life. In natural streams the dissolved oxygen is used to satisfy the biochemical oxidation of organic wastes, but tends to be replaced by absorbtion from the atmosphere and by photosynthetic action of certain green plants. A deficiency of dissolved oxygen in a stream indicates the presence of polluting substances which cause a reduction of the oxygen in the stream. The degree of deficiency is a measure of the deoxygenating effect of a particular waste, and hence an index of the degree of pollution present in the stream. Where a stream receives wastes at a single point and they are well mixed, the dissolved oxygen content tends to follow a typical sag-curve on the basis of time, temperature, oxygen demand, and rate of reaeration of the stream which depends partially upon its turbulence.

In North Carolina studies indicate that a dissolved oxygen minimum of 5.0 ppm is necessary to support trout and 4.0 ppm for other types of game fish. Fish life may survive at dissolved oxygen levels of 2.0 or 3.0 ppm, but it is considered that at least 4.0 ppm is necessary to permit the proper breeding and self-maintenance of the more desirable forms of fish.

Five-Day Biochemical Oxygen Demand (BOD) - The BOD test is the most important made in sanitary analyses to determine the polluting power, or strength of sewage or organic industrial waste. It serves as a measure of the degree of treatment needed for successful disposal of the polluting substance. The standard test involves the incubation of sealed samples of water or waste for five days at a temperature of 20°C and the measurement of the loss of dissolved oxygen during the period of incubation. The loss represents the 5-day 20°C BOD of the sample. The BOD, therefore, is a measure of the amount of dissolved oxygen that may be expected to be absorbed from a stream in five days at 20°C in order to satisfy the biological and chemical oxidation of the organic pollutants carried in the stream at the time of sampling. There is usually a definite relationship between the dissolved oxygen content and the BOD. Generally, in a stream below a source of pollution, it is noted that the D.O. is reduced as the BOD is increased. As natural purification takes place, the D.O. will decrease to the point of the oxygen sag, from whence it will begin to increase. The BOD will continue to decrease. This change continues, other factors being the same, until the D.O. and BOD become normal, indicating that the stream has recovered from the effects of the initial pollution.

The Most Probable Number (MPN) of Coliform Bacteria - The coliform bacteria content is used as a general index of the sanitary condition of a stream. The determination shows the approximate density of a group of bacteria which are always present in the large numbers in sewage and are relatively few in number in the other stream pollutants. Coliform bacteria are normal inhabitants of the intestines of all warm blooded mammals and are discharged in very large numbers in human feces, which constitute the principal source of these bacteria in sewage.

The most important use of the coliform bacteria content is evaluating the safety of water as a source of public water supply, as a suitable bathing area, and for shellfish culture.

The recommended standards for surface waters to serve as sources of public water supply with various types of treatment are specified by the United States Public Health Service. These standards designate the following limiting monthly arithmetical average MPN of coliform bacteria per 100 ml.: (1) For waters requiring only simple chlorination, or its equivalent - not more than 50 MPN; (2) For waters requiring complete rapid sand filtration, or its equivalent, with continuous post-chlorination - average not over 5,000 MPN in one month and exceeding this number in not more than 20% of the samples examined in any one month; (3) Waters requiring the above complete treatment with additional auxiliary treatment - exceeding 5,000 MPN in more than 20% of the samples examined in any one month and not exceeding 20,000 MPN in more than 5% of samples examined during any one month; and (4) Over 20,000 MPN in more than 5% of the samples - water unsuitable for use as a source of water supply unless it can be brought into conformance with acceptable limits by means of long-period storage or some other measure of equal permanence and reliability.

There are no generally recognized standards for the classification of bathing waters with respect to their coliform bacteria content. Coliform bacteria standards have been proposed that vary from an MPN value per 100 ml. of not over 50 to not over 3,000. In considering the suitability of water for public bathing, a sanitary survey of the drainage area and the supervision given by controlling health authorities should be considered as well as the bacteriological content of the water.

Throughout this report, especially in the tables, certain abbreviations have been used. These are listed below:

B.O.D. - Biochemical Oxygen Demand
cfs - Cubic Feet per Second
D.O. - Dissolved Oxygen
D.S. - Domestic Sewage
I.W. - Industrial Waste
M - Municipal
M.G.D. - Million Gallons Per Day
M.P.N. - Most Probable Number
P. - Private
ppm - Parts Per Million
P.E. - Domestic Sewage Population Equivalent

GENERAL DESCRIPTION

The Pasquotank River Basin lies entirely in the Coastal Plain and encompasses a total area of 3,799 square miles within the State of North Carolina, of which approximately 1,100 square miles, or 29%, is covered by water. This basin includes the drainage areas of seven principal rivers, two large creeks, and four sounds, all draining into or connected to Albemarle Sound. It was named after the Pasquotank River, not because it is the main stream in the Basin or has the largest drainage area, but because the center of population and economic development is in the Elizabeth City area which is located on this river. The principal drainage areas that comprise the Basin are as follow: Albemarle Sound, Currituck Sound, North River, Pasquotank River, Flatty Creek, Little River, Perquimans River, Yeopim River, Kendrick Creek (locally called Mackeys Creek), Scuppernong River, Alligator River, Croatan Sound, Roanoke Sound, and that portion of Pamlico Sound that lies north and east of a line extending from the northeast tip of Ocracoke Island to Sandy Point near Stumpy Point Bay.

Albemarle Sound, around which the Basin is centered, is the sunken valley of the Roanoke River, which evidently once flowed to the sea past the present location of Nags Head. The barrier beaches along this reach of the coast, a portion of "The Outer Banks", were thrown up at a later period to form Roanoke and Currituck Sounds. It is not the purpose of this report to discuss the formation of this very complex system of sounds and barrier beaches about which there is much conjecture. Suffice to say that "The Outer Banks" not only are of great importance to the immediate economy of the beach areas, due to the tourist trade drawn to the beaches, but are essential to the protection of the interior shorelines and the social and economic development of the Coastal Plain Area. The one relatively small connection between Pamlico Sound and the Atlantic Ocean, Oregon Inlet, permits an interchange of waters but prevents an undue intrusion of salt water into the interconnected sounds in the immediate area under discussion, although the presence of salt in the quantities found prevents the use of the water for public consumption and certain industrial and agricultural purposes. These characteristics at one and the same time encourage the migration of anadromous fish to upstream spawning areas and result in a salinity favorable to the production of oysters in Croatan, Roanoke, and Pamlico Sounds.

Studies conducted by others, including the period of study encompassed by this report, indicated that the water mass from Edenton to Long Shoal in Pamlico Sound is principally sensitive to Roanoke and Chowan River run-offs and hence is considered to form a single hydro-graphic reality termed the "Albemarle Sound Complex". It was further indicated that in March there is a tendency for fresher water to leave eastern Albemarle Sound as a central wedge flanked by saline water flowing westward. The studies conducted in 1957 in behalf of the State Stream Sanitation Committee reflect summer conditions when the salinity of the water in the upper extremities of the sound tributaries was relatively low. In general the salinity of these waters increased as summer merged into fall. In addition, late fall and early winter studies were conducted by the United States Geological Survey in connection with a cooperative program with the Committee. These studies indicated the intrusion of salt water to the western extremity of Albemarle Sound and under optimum wind conditions, the intrusion of salt water to the upper extremities of the major tributaries included in the Pasquotank River Basin. Pamlico Sound below Oregon Inlet, has several connections to the Atlantic Ocean and these

undoubtedly add to the salinity of the sound waters in its upper reaches with consequent effect upon the "Albemarle Sound Complex".

The Basin encompasses all of six counties, and portions of four. The following tabulation lists the total area of each county lying fully within the Basin, and the estimated area of those lying partly therein, along with the per cent of the total area covered by water:

County	Total Area Square Miles	Estimated Area Within Basin Square Miles	Per Cent Total Area Under Water
Camden	308	308	22%
Chowan	234	124	23%
Currituck	469	469	42%
Dare	1,247	1,247	69%
Gates	348	86	2%
Hyde	1,364	80	53%
Pasquotank	291	291	21%
Perquimans	323	323	2%
Tyrrell	583	583	34%
Washington	420	288	20%
Totals	5,587	3,799	

Topography

The topographic characteristics of the Basin are generally flat, with elevations on the mainland sloping from approximately 20 feet above mean sea level in the northwestern corner of the Basin to marshes that are only a few inches above mean sea level. "The Outer Banks", because of the instability of the sand dunes, generally do not obtain any great height. There are exceptions, however. Some dunes in the vicinity of Nags Head and Kitty Hawk have become fairly stable and have reached considerable height; for instance, Jockey Ridge at Nags Head which is 138 feet high. This is probably the highest point in the Basin.

Albemarle Sound has an approximate surface area of 500 square miles, and experiences a lunar tide of only a few inches. The wind tide, however, is much higher, rising up to several feet which causes considerable damage to low lands during strong southeastern winds or hurricanes. The lunar tides on the ocean beaches range from a mean of 3.6 feet to a high (spring tide) of 4.3 feet. "The Outer Banks", which separate the sounds from the ocean, have only one inlet from the ocean in the immediate area under discussion as noted previously. This is Oregon Inlet that separates Pea Island and Bodie Island. New Inlet, formerly located further south, was permanently closed when the highway was built.

Cover and Climate

The Pasquotank River Basin is largely a rural area, containing only three municipalities with a population exceeding 1,000. These are listed below as of the 1950 census:

Elizabeth City	12,685
Hertford	2,096
Columbia	1,161

The estimated population of the entire Basin, based on the 1950 Census, is 64,000; however, this does not take into consideration the large influx of tourists to the ocean beaches during the summer months.

Approximately 32% of the total land area in the Basin is farm land, and approximately 57% of the land area has a forest cover. There is also a large percentage of land within the Basin that contains nothing but vast marshes and pocosins; however, some of these lowlands have been drained by a system of canals and have become rich and useful farmlands.

The temperature within the Basin is rather mild and constant. The mean temperature for 1957, the year of the sampling program, ranged from a low of 61.0°F at Elizabeth City to a high of 64.3F at the Hatteras Station. This mild temperature was due, in part, to the warm air accompanying the Gulf Stream that approaches within 12 miles of Cape Hatteras. No extreme low temperatures were experienced during the stream study; however, the second week in July a temperature of 101°F was recorded at the Elizabeth City Airport and 99°F at the Weather Station on Bodie Island. The average mean temperature of the five reporting stations in the Basin was 62.4°F in 1957, which is slightly higher than the long term average of 61.8°F. The laboratory based at Elizabeth City encountered several interruptions in their sampling program. During the latter part of the month of August a strong and sustained northeast wind caused low water in the sound and high water in the rivers. Again, in September and early October, the sampling was interrupted by several heavy windstorms and accompanying rains. Although the monthly average of rainfall for the Basin was but 4.7 inches, the average for the month of August was 6.84 inches, and 6.65 inches for September.

The predominate wind in this area, as reported by the Norfolk Weather Station, comes from the southwest, with a secondary wind from the northeast. During the months, August through October 1957, the strong predominate wind came from the northeast. The significance of this wind, with the accompanying rains, was twofold. It had a tendency to push the sound water, with its higher salt content, into the rivers and bays and, following this, as the water receded to the sound, it was accompanied by fresh water flushed from the swamps and marshes adjacent to the sound, thereby tending to make it a swamp-water body.

The snowfall and ice formations within the Basin were so small that they were insignificant.

Stream Flow

It was extremely difficult to obtain accurate flow measurements, because of the tidal effect on most of the streams of the Basin as mentioned previously. Actual measurements were made only on the Pasquotank and Perquimans Rivers. The measurements on the Pasquotank River were made at South Mills, which is 36.9 miles from its mouth, while the Perquimans River measurements were made at Belvidere 23.9 miles from its mouth. The measurements on the main rivers were made by the float method and were supplemented by inflow measurements made on tributary streams. Many of the inflow stations were measured by use of a current meter at points where the streams had a known cross-section. Several reference points were located at various sites to obtain information on the tidal movement in the streams.

ECONOMIC DEVELOPMENT

Population

The estimated population of the Pasquotank River Basin, based on the 1950 Census, is 64,000 as noted previously. This represents an increase of but 3% over that found at the time of the 1940 Census. The counties of Chowan, Pasquotank, and Washington were responsible for the entire 3% increase in population. The remaining seven counties decreased in population from 2% to 18%. The estimated population in the Pasquotank River Basin, by counties, is as follows:

County	Population 1950	Estimated Population in Basin
Camden	5,223	5,223
Chowan	12,540	500
Currituck	6,201	6,201
Dare	5,405	5,405
Gates	9,555	500
Hyde	6,479	725
Pasquotank	24,347	24,347
Perquimans	9,602	9,602
Tyrrell	5,048	5,048
Washington	13,180	6,500
Totals	97,580	64,051

The area along the coast of Dare County, called "The Outer Banks", is merged into a modern ocean resort from Southern Shores near Kitty Hawk southward some twenty miles to Oregon Inlet and the northern entrance of Cape Hatteras' National Seashore Recreational Area. The communities of Kitty Hawk, Kill Devil Hills, and Nags Head are within this area.

More different kinds of fish have been caught in the waters off the Dare Coast of North Carolina than anywhere else in the Nation. Excellent fishing is found in the ocean, inlets, surf, fresh and salt water sounds, bays, rivers, and lakes. Hatteras and Oregon Inlets and the Gulf Stream, which flows nearer the coast line at Cape Hatteras than anywhere north of southern Florida, are a great attraction for sportsmen and tourists.

These attractions bring large numbers of people to the coastal area during the summer and it is becoming a year-round resort area.

The entire Pasquotank River Basin is classified as rural, except Elizabeth City in Pasquotank County which has a population of 12,685.

Industry

The chief source of income in the Basin is agriculture, except in Dare County where storms and hurricanes flood the major portion of the low lands and rendered them unusable for agricultural purposes.

There was a total of 163 manufacturing establishments in the Basin, with a total of 2,800 persons employed, earning annual wages of $5,952,000, or an average of $2,116.00 per person employed in industry for the year 1956. The combined industrial and farm incomes provide a per capita income of $812.00, which emphasizes that the principal income is from farm products.

The industries include lumbering and pulpwood operations which are prevalent in the inland sections of the Basin. There are one cotton spinning mill and one hosiery mill in Elizabeth City.

Forest Resources

Forest land in the Basin consists of 57% of the total land area. The major part of the timber is of commercial quality. The swamps along the mainland produce many Juniper and Cypress trees which are also of commercial quality. There are no paper mills in the Basin; however, the West Virginia Pulp and Paper Company is developing the greater portion of the woodland along the Dare County mainland. There are also several pulpwood buying stations operated by other major pulpwood paper companies, as well as several large saw mills that manufacture lumber. Elizabeth City, in Pasquotank County, is a lumber manufacturing center, having several large saw mills and lumber finishing plants.

The following is a tabulation of some of the forest uses as listed in Forest Survey Release No. 45, "Forest Statistics of the Northern Coastal Plain of North Carolina - 1955":

County	Total Forest Land - Acres	Public Owned Forest Land - Acres	Pulpwood Production Standard Cords	Saw Timber Million Board Feet
Camden	105,000	100	-	368.8
Chowan	66,200	400	2,151	288.5
Currituck	98,100	2,200	-	486.6
Dare	158,200	0	-	431.8
Gates	158,800	0	22,628	751.5
Hyde	188,700	3,100	16,381	710.3
Pasquotank	86,100	600	52	411.2
Perquimans	102,300	800	-	449.6
Tyrrell	228,300	100	12,500	956.9
Washington	119,400	400	6,531	441.2
Totals	1,311,100	7,700	60,243	5,296.4

Agriculture

Corn is the principal crop, with soy beans second in acreage and value, among the many crops produced in the Basin. The counties of Camden, Currituck, Pasquotank, and Tyrrell produced 10,220 acres of Irish potatoes in 1956, making them the leading Irish potato producing counties in the State. The long, growing season and rich soil make possible the production of several truck crops in abundance. While a large number of hogs are raised for market purposes, cattle raising is not of great importance; however, there has been some increase in both dairy and beef-type cattle during the past five years. In 1954, the poultry industry showed a slight gain over the previous reporting year of 1950, although the number of farms raising poultry dropped more sharply. In the reporting year of 1954, 788 farms sold 299,206 chickens, while in 1950, 1,963 farms sold 178,994.

The following is a tabulation, by counties, of the livestock and poultry sold in the Basin during the year 1954 as given by the Census of agriculture of that year:

County	Cattle and Calves Sold	Chickens Sold	Hogs and Pigs Sold Alive
Camden	1,090	4,764	5,402
Chowan	789	9,342	16,183
Currituck	711	112,975	4,552
Dare	54	370	25
Gates	1,056	131,917	25,310
Hyde	970	2,859	4,803
Pasquotank	2,140	10,122	10,576
Perquimans	834	10,867	15,045
Tyrrell	763	7,184	11,290
Washington	795	2,806	9,919
Totals	9,202	293,206	103,105

The following table also gives some indication of the agricultural status of the counties in the Basin and the value of the eleven principal crops as reported in the pamphlet "N. C. Agricultural Statistics (1956)":

PASQUOTANK RIVER BASIN

County	Number of Farms	Acres Harvested	Land Under Irrigation Acres	Cash Value In Principal Crops
Camden	434	32,479	2	$ 2,752,440
Chowan	895	32,204	189	3,952,430
Currituck	544	33,083	79	2,888,260
Dare	39	171	0	10,000
Gates	1,166	37,458	0	4,349,470
Hyde	570	32,081	31	1,942,280
Pasquotank	791	43,236	84	3,694,590
Perquimans	888	45,259	0	3,721,230
Tyrrell	499	16,064	0	1,391,790
Washington	773	30,990	0	3,561,010
Totals	6,599	303,005	385	$28,263,500

Mineral Resources

There are no apparent mineral resources in the Pasquotank River Basin, other than deposits of non-metallic minerals such as sand, clay, marl and other similar deposits which have little or no commercial value as products.

Electric Power

The electric power in the Basin is supplied by Virginia Electric and Power Company. The Company maintains a standby generator at Kitty Hawk with a capacity of 1200 kw and one at Manteo of unknown capacity.

The general terrain along the rivers in the Basin does not adapt itself to the development of hydro-electric power; therefore, there are no power installations of this type therein.

Fish and Wildlife

The entire Basin might well be termed a sports fisherman's paradise. The streams, sounds, and the ocean are natural habitats of numerous species of fish which attract many sports fishermen to the area for both fresh and salt water fishing. Many species of fish can be caught during any month of the year. While the inlets and the ocean may be better known to many fishermen, the inland rivers, such as North, Pasquotank, Perquimans, Scuppernong, and the Alligator, support numerous Bass, Bream, Crappie, and Perch. Herring (Alewifes) are abundant in Albemarle Sound and Scuppernong River during the spring months and are caught in pound nets in large quantities.

There is one Wildlife Refuge located in the Basin, the Pea Island National Wildlife Refuge, which begins at Oregon Inlet and runs south almost to the Town of Rodanthe. This refuge, which includes about 5,880 acres, is one of the winter homes of the great snow geese, accommodating probably half the population of these birds of which there are not more than 20 to 30 thousand in the world. Many of Canada's geese and brant come there, as well as practically all species of ducks that winter along the North Carolina coast. The average winter population of ducks and geese has increased from about 15,000, when the refuge was established, to about 50,000 ten years later. Pea Island is one of the three National Wildlife Refuges in North Carolina that provide winter food and shelter for more than 100,000 water fowl.

Commercial Fishing and Shellfishing

The following portions of the Pasquotank River Basin have been designated by the Department of Conservation and Development's Division of Commercial Fisheries as commercial fishing waters including many of their larger tributaries:

1. Albemarle Sound.
2. Currituck Sound.
3. North River below a line connecting the southern and northern points of the mouth of Indiantown Creek.
4. Pasquotank River below Highway No. 158 Bridge at Elizabeth City.
5. Big Flatty Creek below a line from Long Point to the northeast corner of Folly Creek.
6. Little River below a line from the south bank of Manston Creek to the north bank of Davis Creek.
7. Perquimans River below Crows Point.
8. Scuppernong River below First Creek (Riders Creek).
9. Alligator River below Cherry Ridge Landing.
10. The Frying Pan below Coopers Creek, exclusive of the narrows.
11. Croatan Sound.
12. Roanoke Sound.
13. Pamlico Sound.

A number of these waters are valuable nursery areas for the striped bass (rock fish) which are spawned in Roanoke River.

Commercial fishing plays an important part in the economy of the Pasquotank River Basin, especially in the extreme eastern and southern areas. A great number of people are dependent upon the fishing industry for a livelihood, and for others, it provides part-time employment during seasons when agricultural work is slack.

Pamlico Sound, which interconnects with Roanoke and Croatan Sounds, is one of the best known and most prolific shellfish growing areas in the State. The waters of Croatan Sound, south of the William B. Umstead Memorial Bridge, and Roanoke Sound, south of a line running from Ballast Point through the northern tip of Nags Head Island to a point on Bodie Island, to and including Pamlico Sound, are well adapted to shellfish culture, because of the salinity and other chemical qualities of the waters. The shallow depth and large marshes along the shores of the sounds provide excellent growing areas for all types of shellfish adaptable to these waters.

There is only one area in the Basin waters which is closed for the taking or handling of shellfish for marketing purposes. This area, Shallowbag Bay, at Manteo, Roanoke Island, was closed by Regulation No. 8 adopted by the Department of Conservation and Development on recommendation of the State Board of Health after careful study. Regulation No. 8 reads as follows:

"It shall be unlawful for any person, firm or corporation to take, catch, bed, lay out or float oysters or clams or for any person, firm or corporation to sell, offer for sale or to have in possession clams or oysters taken, caught, bedded, laid out or floated in Shallowbag Bay at Manteo, North Carolina, within the following territory: Inside a line beginning at Baum Point and running due southeast six hundred and ninety-four yards to the channel, thence following the channel in a southwesterly direction approximately one thousand two hundred and fifty yards to flashing light beacon in the harbor: thence south to a point on the island; thence following the shore line to the point of beginning."

Shallowbag Bay is not suitable for the propagation of shellfish. The above regulation was designed to prevent the use of contaminated water during the handling of shellfish prior to marketing.

There were twenty wholesale water product dealers in the Basin extending from Elizabeth City to the coast and along the southern shores of Albemarle Sound. The following information, supplied by the Department of Conservation and Development's Division of Commercial Fisheries at Morehead City, gives the location of fish processing plants and the volume and type of water product handled. These figures are for table-grade water products shipped from these points during the 1957 Calendar Year:

Location	Shrimp Pounds (Heads Off)	Fish Lbs.	Oysters Tubs	Soft Crabs Dozen	Hard Crabs Lbs.
Hatteras	47,100	1,046,333	-	-	153,160
Wanchese	139	911,566	38	171	817,448
Manteo	-	743,015	-	-	-
Stumpy Point	93,588	799,946	13,473	-	121,123
Manns Harbor	-	287,760	-	138	1,143,832
Elizabeth City	-	387,577	-	-	-
Poplar Branch	-	353,631	-	-	-
Columbia	-	720,305	-	-	-
Totals	140,827	5,241,133	13,511	309	2,235,563

Quality Of Water In Commercial Fishing And Shellfishing Areas

In order to consider the question of water quality in true perspective in the areas listed above, it is necessary not only to study the effects of pollution from sewage and industrial waste, but to study the effects of the character of the streams as well. Such studies include the following:

Swamp Waters

Regulation No. II of the Rules and Regulations of the State Stream Sanitation Committee, Item 9, defines "Swamp Waters" as follows:

> "Swamp waters shall mean those waters which are so designated by the State Stream Sanitation Committee and which are topographically located so as to generally have very low velocities and certain other characteristics which are different from adjacent streams draining steeper topography."

Such waters are characterized by high color, low pH, and dissolved oxygen due to decay of organic substances, and sluggish flow. The flushing of swamps during periods of continuous or extensive rainfall may affect seriously receiving waters otherwise of good quality. Where the receiving waters are bordered by swamps, the effects of swamp waters are intensified. Not only do the flushings introduce water with low dissolved oxygen into the receiving waters but add organic matter as well which tends to further reduce the oxygen assets. Such is the case in respect to all of the waters of the Pasquotank River Basin, except those of the Atlantic Ocean, and they are, therefore, designated as "swamp waters". As such, those waters which may be classified "C" or "SC" for the protection of fish life may have as little as 3.0 ppm of dissolved oxygen and a pH as low as 4.3.

Tidal Salt Waters

Regulation No. II of the above mentioned Rules and Regulations, Item 8, defines "Tidal Salt Waters" as follows:

> "Tidal salt waters shall mean all tidal waters which are so designated by the State Stream Sanitation Committee and which generally have a chloride ion content in excess of 500 ppm."

It has been noted previously that the waters of Roanoke, Croatan, and Pamlico Sounds, and their tributaries, have a salinity satisfactory for the culture of shellfish. A review of the analyses, contained in Table No. 7, which were made during the summer and early fall of 1957, indicates that the chloride ion content of the Albemarle Sound tributaries was not sufficient to place them in the tidal salt water classification; however, further study of unpublished analyses, made by the U. S. Geological Survey as mentioned previously, indicates that during the period from October 15 to January 1, the chloride ion content of the Albemarle Sound tributaries for some distance upstream was far above the minimum limits for "Tidal Salt Waters". A study of the wind's direction and velocity for this area reveals that the prevailing north and northeast winds, during the fall and winter, drive salt water from Albemarle Sound upstream to greater limits than during other periods of the year, while the late winter and spring rains cause heavy inflow into the streams, thus driving the salt water back into the sound. The "Tidal Salt Water" streams are:

1. Albemarle Sound.
2. Currituck Sound and Tributaries.
3. North Landing River.
4. North River to narrows upstream from Cow Creek.
5. Pasquotank River to Norfolk Southern Railroad bridge near Camden.
6. Newbegun Creek to Wilson Creek.
7. Little Flatty Creek.
8. Big Flatty Creek.
9. Little River to Halls Creek.
10. Deep Creek to a point one mile above its mouth.
11. Symond Creek to N. C. Hwy. #170.
12. Perquimans River to Norfolk Southern Railroad Bridge near Hertford.
13. Raccoon Creek to Harveys Neck Bridge.
14. Sutton Creek to a point one mile above its mouth.
15. Canaan Cove Creek to narrows.
16. Yeopim River to mouth of Bethel Creek.
17. Yeopim Creek to a point 2.0 miles above its mouth.
18. Kendrick Creek to mouth of Bakers Swamp.
19. Scuppernong River to mouth of Second Creek.
20. Alligator River and tributaries to mouth of Northwest Fork.
21. South Lake and Tributaries.
22. East Lake and Tributaries.
23. Peter Mashoes Creek and Tributaries.
24. Croatan Sound and Tributaries.
25. Roanoke Sound and Tributaries.
26. Pamlico Sound and Tributaries.

This information is very valuable to industry as water having a chloride ion content in excess of 500 parts per million would be unsatisfactory for many industrial purposes, and very unsatisfactory as a source of drinking water. The solubility of oxygen is less in salt water than in fresh water and for given temperatures, the saturation levels of dissolved oxygen are appreciably less in waters of high salinity.

Water otherwise suitable for shellfish culture may contain coliform bacteria in such number as to render the shellfish unsafe for human consumption. The discharge of any amount of domestic sewage into waters from which shellfish are taken for human consumption should be considered a potential danger. This, however, does not rule out the approval of all, or portions of such areas, provided the following criteria, recommended by the U. S. Public Health Service in U. S. Public Health Service Bulletin No. 295 - p. 586 (1946), are met:

> "The Sanitary Survey shall disclose no likelihood that fecal discharges reach the area in dangerous concentrations, or before sufficient time has elapsed to render such discharges innocuous. The median bacteriological content of samples of water collected from those portions of the area, determined by a sanitary survey to be most probably exposed to fecal contamination, shall not show the presence of organisms of the coliform group in excess of 70 to 100 ml. of water expressed in terms of most probable numbers (MPN) in a series of samples from each station sufficient to determine the condition existing."

The death rate of bacteria in water depends upon environmental factors and time. The concentration of bacteria in a stream immediately below a source of pollution during normal flows may be very high, but, because of slow movement of the water, the bacteria found at downstream sites of beneficial uses will be within acceptable limits. On the other hand, while higher flows, or flood flows, may reduce the number of bacteria immediately below a source of pollution by the process of dilution, the more rapid movement of the water may result in the number of bacteria exceeding acceptable limits at the site of beneficial uses. The number of bacteria found in streams may be increased by surface drainage above normal levels during periods of prolonged or intensive rainfall. In the absence of sewage discharges such bacteria may be considered harmless. In the case of the Pasquotank River at Elizabeth City and the Perquimans River at Hertford, the waters adjacent to the shores contain bacteria which greatly exceed normal values, because of the untreated sewage discharged along the shore, and these waters would not be considered satisfactory for either bathing or for the culture of shellfish, if they were otherwise deemed suitable for such purposes.

With the above information in mind, the conditions existing in 1957 are described as follows:

Commercial Fishing Waters

The commercial fishing waters as designated by the Division of Commercial Fisheries, Department of Conservation and Development, all lie in areas defined as "Tidal Salt Waters" by the State Stream Sanitation Committee. The headwaters of the tributaries of the sounds, which are designated as commercial fishing waters as well as those not so designated, drain extensive swamplands and in some cases the main bodies are bordered by swamps. As a result the tributaries as well as the sounds have been designated "swamp waters" by the Committee as noted previously.

Under the conditions experienced during the stream studies in 1957, the headwaters of the sound tributaries were universally low in dissolved oxygen, although the lands are sparsely populated and the waters are free from man-made pollution, had a relatively low pH, and were highly colored. As these oxygen deficient waters entered the commercial fishing waters, where the rivers rapidly acquired considerable width, diffusion, wind action, and photosynthesis to some extent, introduced dissolved oxygen into the water and satisfactory conditions for maintaining fish life prevailed, except as influenced by the discharge of appreciable quantities of sewage and/or industrial waste.

The swampy headwater streams, while deficient in dissolved oxygen, appeared to support an abundance of fish life for the most part. This is apparently in contradiction to established standards recommended for satisfactory fishing waters. Two suggestions have been advanced to explain this phenomenon: One is that fish in southern waters can acclimate themselves to a deficiency of dissolved oxygen under certain conditions. In this connection, it has been demonstrated time after time that where the oxygen assets have been depleted below acceptable levels by man-made activities fish cannot survive, except possibly certain types of rough fish. The second suggestion concerns the tests for dissolved oxygen as it relates to swamp waters which contain tannic and other organic acids from natural decomposition products. It has been suggested that these acids interfere with the tests and prevent the true determination of the amount of dissolved oxygen in swamp waters. In other words, there is more dissolved oxygen in such waters than the present standard tests reveal; hence, fish survive. While this matter is being investigated, it requires much clarification before positive conclusions can be drawn. For the

time being, it must be assumed that the present findings are correct.

The streams in the Pasquotank River Basin in large measure drain sparsely populated areas and the commercial fishing waters are not adversely affected by man-made pollution, except as described below:

Pasquotank River below Highway No. 158 Bridge at Elizabeth City - This river above Elizabeth City originates in the Dismal Swamps and is partially bordered by swamps for its entire length. The watershed above Elizabeth City is sparsely inhabited but at this City the river itself and streams draining thereto are polluted with untreated sewage and industrial wastes with a population equivalent (P.E.) of 17,858. In addition the river receives a much smaller amount of sewage and plating wastes from the U. S. Coast Guard installations below the City. The net result is a delay in the recovery of low dissolved oxygen due to natural upstream conditions and the survival of rough fish only for some distance downstream, although the dissolved oxygen determinations were well within acceptable limits. In this connection a fish kill was reported in the river in the fall of 1956 near the U. S. Coast Guard Air Station at Weeksville when the dissolved oxygen was less than 2.0 ppm. Other considerations relative to the fish kill are not known i. e. rainfall and flow conditions. Since the wastes above the fish kill are not treated these discharges are suspect; however, if the kill was accompanied by heavy rains with extensive drainage of swamps it may have been the result of both man-made and natural pollution as has occurred in other reported kills in swamp water streams. Until such time as the wastes in the Elizabeth City Area are effectively treated, it can be anticipated that other fish kills will be reported.

Perquimans River Below Crows Point - This river also originates in swamps and receives waste pollution at Hertford with a P.E. of 2,100, much less in magnitude than that of the Elizabeth City Area. In this case the recovery from the upstream oxygen deficiencies due to natural conditions was more rapid than for the Pasquotank River.

Scuppernong River Below First Creek or Riders Creek - The untreated sewage reaching the river from Columbia had a P.E. of only 728; nevertheless, the recovery of the oxygen deficiency due to natural upstream conditions was delayed by the discharges. The adverse conditions were further agravated by the indiscriminate dumping of offal into the river from a fishery operation in this town.

Roanoke Sound - Shallowbag Bay - The sewage from Manteo, with a P.E. of 1,180, is discharged untreated to the bay as well as untreated waste from several business establishments. These wastes did not reduce the dissolved oxygen assets unduly but it must be borne in mind that sludge banks are formed in the vicinity of the discharges which do affect the type of fish which reside in such waters.

As a matter of interest, Croatan, Roanoke, and Pamlico Sounds, because of the higher salinity, appear to support only salt water fish populations.

Shellfishing Waters

The waters of the Pasquotank River Basin suitable for the propagation and harvesting of shellfish for marketing purposes are free from sources of pollution, with minor exceptions, and are approved for the taking of shellfish for human consumption by the State Board of Health. As noted previously only a portion of Shallowbag Bay, which lies outside of the waters most suitable for

the propagation of shellfish, has been closed for the taking of shellfish for marketing and this closure was designed to prevent the use of contaminated water during the handling of the shellfish prior to marketing. The samples collected during the 1957 stream studies confirm earlier findings by the State Board of Health. The areas within the waters suitable for the propagation of shellfish, which are exposed to pollution, are described as follow:

Croatan Sound - The canal adjacent to the old ferry slip at Manns harbor is subject to some pollution from the population residing in the area as evidenced by the presence of coliform bacteria in numbers as high as 4,300 (M.P.N.) per 100 ml. It would appear advisable to prevent the harvesting of shellfish for human consumption in the open area which lies adjacent to the mouth of this canal.

Roanoke Sound - The waters immediately adjacent to Pond Island, through which U. S. Highways 64 and 264 passes, is subject to pollution from the small population residing on the island and by sewage from boats. The water of the small canal or slip immediately north of the highway and at the west side of the island contained coliform bacteria in numbers as high as 150 (M.P.N.) per 100 ml. which exceeds the limits normally considered safe for shellfishing waters. It appears advisable that shellfish should not be taken for human consumption from such waters.

A second area in this sound which is a questionable source of shellfish for human consumption is that portion of Mill Creek which receives drainage from the Town of Wanchese. This small Town does not have a unified sewage collection system and each property depends upon local means of sewage disposal. At least one seafood processing plant has a septic tank for sewage disposal with the effluent being discharged into the creek. In addition a number of fishing boats with overboard toilets frequent the area. The water contained coliform bacteria in numbers as high as 750 (M.P.N.) per 100 ml. The taking of shellfish in these waters should be prevented.

Pamlico Sound: Stumpy Point Bay - This bay is a circular indentation of the sound with a diameter of about 2 miles. Sewage from the Stumpy Point Navy Target Station at Lake Worth, so called, is discharged through a septic tank and after chlorination is discharged to the bay via a short canal. The north and east perimeter of the bay at Stumpy Point is lined with houses, each with a local septic tank and subsurface disposal unit which may not always work properly because of the high water table. Samples of water collected at the mouth of the bay contained coliforms in numbers as high as 930 per 100 ml. It is understood that the State Board of Health is going to review their former approval of these waters for the taking of shellfish in the summer of 1960 with the idea of closing the waters if their study shows that they cannot meet the Public Health Standards.

Transportation

The entire Basin is served by a network of State and Federal highways, as well as by many secondary roads that connect rural areas to primary roads. U. S. Highway 64 traverses the section south of Albemarle Sound and, after joining U. S. Highway 264 near Manns Harbor, crosses Croatan Sound via the new William B. Umstead Bridge to Roanoke Island and then Roanoke Sound to join U. S. Highway 158 in the vicinity of Nags Head. N. C. Highway 32 connects the section south of Albemarle Sound with the northern section by means of a bridge crossing Albemarle Sound, while U. S. Highway 17 connects the Basin with the Roanoke-Chowan section of the State and the State of Virginia. N. C.

Highway 158 bisects the portion north of Albemarle Sound, crosses Currituck Sound at Point Harbor, and then extends southward along the coastline of "The Outer Banks" to close the loop around Albemarle Sound in the vicinity of Nags Head. An extension of these Federal highways follows the coastline to Ocracoke with free ferry service across Oregon and Hatteras Inlets. It has long been recognized that the free ferry service across Alligator River has not been adequate to serve "The Outer Banks" from the South and West. A bridge is presently under construction across Alligator River, while a bridge is projected for construction across Oregon Inlet. In addition, the new ferry service from Atlantic to Ocracoke is supplying a long-felt need and with projected improved ferry service across Hatteras Inlet, the encouragement of North-South travel through one of the most picturesque sections of North Carolina appears to be assured in the not too far distant future. These far-reaching steps will accelerate the development of "The Outer Banks", in addition to providing excellent transportation facilities to various parts of the State.

The northern section of the Basin is served by the Norfolk-Southern Railroad which is the only railroad operating in the area. As a result a sound highway system is essential to the economy of that section of the Basin lying south of Albemarle Sound. It becomes readily apparent that the bridge across Alligator River will serve not only the movement of tourists into the beach areas but will facilitate the movement of needed supplies as well. There are no commercial airlines serving the basin but landing strips at Manteo, Barco, and Elizabeth City for private and chartered small planes provide an essential service to the economy of the general area.

The North, Pasquotank, and Perquimans Rivers, as well as Albemarle, Croatan, Roanoke, and Pamlico Sounds, are all navigable for craft of modest draft. As a result these waters are not only used for pleasure craft but are used for freight, tankers, and fishing craft as well. The Intracoastal Waterway provides for North-South traffic through the Basin via two channels. One includes the Dismal Swamp Canal and Pasquotank River, while the other includes the North Landing River, Coinjock Bay, a canal through the village of Coinjock, and North River, with both systems utilizing Albemarle Sound and Alligator River.

In short as one reviews the present transportation systems within the Basin and their impending improvement, and contemplates the bountiful assets provided by nature, the future of this area appears to be assured subject only to the determination of the people who inhabit the area. The development of recreational facilities afforded by improved transportation systems ranks high among the assets of the Basin.

Parks and Recreation

The one factor that will undoubtedly contribute most to the future economic development of the Pasquotank River Basin is tourist trade. Even now the impact of tourism is a vital part of its economy. The geographical location of the Basin, including its proximity to the Gulf Stream which influences the mild climate, is one of the largest natural assets of the area. Tourists are not only drawn from various sections of North Carolina, but from many adjoining and far distant states as well. The area is so located as to present a happy medium between the extremes of the New England States and the more southern states. The entire eastern boundary of the Basin consists of 85 miles of "The Outer Banks", each mile enveloping characteristic sandy beaches, gently sloping into the ocean. "The Outer Banks" have formed relatively fresh bodies of water, namely, the sounds, which make it possible for a sportsman to

fish for fresh water species in the sounds, then walk a short distance to the ocean and inlets where he can fish for salt water species in the surf or, by boat, go deep sea fishing. The recreational facilities of the Basin are not confined to the coastal areas. The inland waters contain several beaches, both public and private, that are very extensively used. The majority of the inland streams are of such quality that they contain many types of commercial and pan-type fish as has been discussed previously.

Many sports, other than bathing and fishing, play an important part in the recreational life of the Basin. Various types of game ranging from bear and deer to rabbit and water fowl are available to the hunter. The Atlantic flyway for geese and duck, migrating to and from the south, passes over Pea Island, which has been made a protected refuge for water fowl by the U. S. Fish and Wildlife Service. Although this area is protected, there are many other places where blinds have been located by hunters. Within recent years, water skiing has become a very popular sport all over the State, including the coastal areas. Facilities for skiing can be found in many of the rivers and protected bays and sounds. Boating, which is one of the oldest water sports, is also very popular within the Basin. Probably the most notable is boat racing in the Pasquotank River at Elizabeth City.

There is only one State Park located within the Basin. This is The Pettigrew State Park, located on Lake Phelps in Washington and Tyrrell Counties. This 16,823 acre park, made up largely of the lake, affords a place for boating, skiing, fishing, and various nature studies. Although the water in the lake is of good quality, there is no bathing allowed; however, water skiing has become very popular. There are no facilities for overnight camping provided at the lake.

There are within the Basin, in addition to the above, one National Park and one National Historic Site. The National Park is the National Seashore Recreational Area, which consists of three of "The Outer Banks" islands, Bodie, Hatteras, and Ocracoke. All but Ocracoke are within the Pasquotank River Basin. The primary recreational interests in this area consist of bathing, fishing, wildlife on the Pea Island Wildlife Refuge and scenic attractions such as the famous sand dunes, old ship wrecks, and three lighthouses. There are no permanent living facilities maintained by the park service; however, "rough camping" is permitted at Oregon Inlet and near the point at Cape Hatteras. The Wright Brothers National Memorial, located at the beach community of Kill Devil Hills, is a shrine and museum dedicated to Wilbur and Orville Wright who made the first successful airplane flight. The National Historic Park is the Fort Raleigh Historic Park, located on the northwestern tip of Roanoke Island. This park is on the site of the historically famous "Lost Colony". The drama by the same name is presented at the Seaside Theatre at the park from July to September. While there are no living facilities at the park, drinking water is provided from wells and public rest rooms and cast dressing rooms are maintained during the theatrical season from which domestic sewage is discharged untreated into Roanoke Sound via one six-inch and one four-inch line at the rear of the theatre. Samples taken in the vicinity of the outfall indicated no gross pollution; however, they were not taken in the evening when the largest crowd would have been present at the park.

The principal recreation points or areas in the Basin are described by counties as follows:

Camden County

This county has recreational potentials of considerable importance, namely, Albemarle Sound, Lake Drummond Canal, and Pasquotank River.

These have not been developed except on the Pasquotank River. Water skiing has become popular in the vicinity of Elizabeth City. Boat docks and other facilities are available off U. S. Highway 158 at the western end of Machelhe Island. On weekends, during the summer months, the waters at the eastern end of the island are used very extensively by local people for water skiing. No samples were collected in the immediate vicinity but analyses at Sampling Station 11, located approximately one mile upstream from this point, indicated there was back-flow of untreated sewage and industrial waste from the Elizabeth City area due to wind tide action, and as a result these waters cannot be recommended as a bathing area. There are three known bathing areas below Elizabeth City which are described as follows:

Treasure Point has no public bathing facilities but is the site of about 15 to 20 private cottages located on Pasquotank River near the mouth of Areneuse Creek about 2.9 miles below Elizabeth City. The docks near the cottages are used as diving piers for bathers, as well as landing points for boaters and skiers. The bathing and skiing areas are located below the pollution from Elizabeth City and across the river from the U. S. Coast Guard facilities where untreated sewage and industrial waste are discharged into the river. Samples taken in the bathing area contained coliform bacteria that ranged in numbers up to 9,300 (M.P.N.) per 100 ml. Although these samples did not run consistently high, public bathing in this area should be restricted until remedial steps are taken both at Elizabeth City and U. S. Coast Guard facilities.

Taylor Beach also has no public bathing facilities. The area consists of many homes with frontage on the river. Considerable use is made of the many private beaches and docks for bathing, boating, and skiing. This area lies approximately 5 miles downstream from Elizabeth City and diagonally across the river from the U. S. Coast Guard facilities, each of which are discharging untreated domestic sewage into Pasquotank River. As long as these practices continue, the safe use of this location for public bathing is questionable.

Elizabeth City (Texaco) Beach is located 6.0 miles below the Elizabeth City pollution, 2.6 miles below that from the U. S. Coast Guard facilities, and only 2.1 miles upstream from New Begun Creek which contains partially treated wastes from the U. S. Navy Air facility. There is a concession building located at the beach which also contains dressing rooms for the bathers. Domestic water is obtained from wells, while domestic sewage is disposed of by septic tank and nitrification lines. The samples taken from the beach water contained coliform bacteria in numbers as high as 15,000 (M.P.N.) per 100 ml. which greatly exceed the numbers normally considered safe for outdoor bathing waters.

In considering the suitability of the waters just discussed for public bathing, consideration must be given to the sanitary survey of the area as well as to the condition of the water as sampled. Most of the samples collected contained coliform bacteria in numbers within the range normally considered safe for outdoor bathing waters. These samples were collected in large measure during a period of little rainfall when the downstream movement of water was limited to the vagaries of wind action to a great extent. Hence the objectionable bacteria were reduced in numbers in accordance with their natural death rate before reaching the bathing areas. On the other hand, the objectionable numbers of bacteria were obtained on October 8, 1957, following an accumulated rainfall of 4.23 inches on October 5 and 6, which resulted in a more rapid carrage of the untreated wastes from the upstream sources of pollution to the downstream bathing areas. While part of the pollution

may have been due to the runoff from the populated areas at the beaches, the large quantities of upstream pollution discharged into the river must by necessity be considered a public health hazard to these waters used for public bathing.

Chowan County

Although only a small portion of Chowan County is within the Basin, the most heavily used inland beach of the Basin is in this county. This is Sandy Point Beach located at the north end of State Highway 32 bridge on Albemarle Sound. The beach is operated commercially and provides a bathhouse, restrooms, a concession stand, and picnic tables. It is a sandy, gently sloping beach that somewhat resembles the ocean beaches. During the height of the summer months, as many as 1,000 persons have been known to use the beach in one day. Samples were taken at two points, 100 feet apart, in front of the concession stand. The coliform bacteria content ranged from 9.1 (M.P.N.) per 100 ml. to 230, all within the range normally considered safe for public outdoor bathing waters.

Currituck County

The principal attractions in Currituck County are probably "The Outer Banks" and Currituck Sound. Several private beaches line the shore of the North River, as well as Currituck Sound, at which groups and individual families go to enjoy fishing, boating, skiing, and bathing. There are several hunting and fishing clubs located along "The Outer Banks" that are generally occupied during this season. Probably the most notable of these would be at Corolla Village. This is the site of an old private home and Hunt Club, which has recently been converted into a school for boys. Drinking water is obtained from wells, while sewage is disposed of by use of septic tanks with nitrification lines. There is bathing in an artificial pool, as well as at the beach on the ocean side. The school owns five miles of what is possibly the most beautiful ocean strand in North Carolina. There is a Navy Radar Station and Lighthouse near the school, which also has a septic tank with nitrification field for sewage disposal.

Westelrod Camp is a boys camp located on Tull Creek at a private home. The camp operates only on Saturday and provides no overnight living facilities. Tull Creek was used at one time for bathing but this has been discontinued.

Dare County

The recreation potential is probably more developed in Dare County than in any other section of the Basin. Bodie Island, from the Wright Memorial Bridge to Oregon Inlet is very heavily populated during the summer and is increasingly becoming the home for year-around residences. Each of these homes, hotels or motels, are supplied with septic tanks with underground drains which are located at a safe distance from the beach. Drinking water is supplied by either point wells, or cisterns. Although the entire coastline of "The Outer Banks" within the county is a potential beach area, it was very impracticable to sample the entire area; therefore, locations where bathing was felt to be most heavily concentrated were chosen as sampling points. These locations are described as follows:

Kitty Hawk - The beach at this location was sampled at 100 foot intervals for a distance of 500 feet north of the Sea Ranch Motel in the Southern Shores Beach Section. The results of the analyses ranged from an average of <3.6 coliform bacteria (M.P.N.) per 100 ml. to an average of <150. All analyses were

within the range considered safe for public outdoor bathing waters.

Kill Devil Hills - The beach at this location was sampled opposite the Bel-Air Motel and at 100-foot intervals for 200 feet both north and south of the motel. The results of the analyses ranged from an average of <3.6 coliform bacteria (M.P.N.) per 100 ml. to an average of <17. These results indicate that the water is of excellent quality for public bathing.

Nags Head - The beach at this location was sampled opposite the Carolinian Hotel and at 100-foot intervals for 200 feet both north and south of the hotel. The results of the analyses ranged from an average of <5.4 coliform bacteria (M.P.N.) per 100 ml. to an average of <18. These results indicate that the water is well within the range considered safe for public outdoor bathing waters.

Glennlea Beach (Coquina Beach) - This beach is also located on Bodie Island but in a more remote location than the beaches mentioned above. It is approximately 5.5 miles south of the approach to the Roanoke Sound Bridge. The beach has a bathhouse, restrooms, picnic tables, and a life guard. Drinking water is obtained from a well, while domestic sewage is disposed of by use of a septic tank and nitrification lines. Samples were taken opposite the bathhouse and 100 feet north and south of same. The analyses ranged from an average of <5.4 coliform bacteria (M.P.N.) per 100 ml. to an average of <86, all being well within the range considered safe for outdoor bathing waters.

Cape Hatteras Beach is located beneath the Cape Hatteras Lighthouse near Cape Point, where Hatteras Island juts into the ocean. The beach is part of the National Seashore Recreation Area and is connected with one of the "rough" camping areas located within the park. It is also located near the Buxton U. S. Navy Communications Facility. The beach has a bathhouse, rest rooms, and picnic tables. Domestic water is obtained from wells, while domestic sewage is disposed of by use of a septic tank and nitrification lines. Because of the remote location of the beach, samples were taken during one day only. One series was taken at mean tide while it was ebbing, and one near low tide while it was flooding. The samples were taken opposite the bathhouse and at 100-foot intervals for 200 feet north and south of same. All results showed <3.6 coliform bacteria (M.P.N.) per 100 ml., which indicates the water was of excellent quality for public outdoor bathing.

Shallowbag Bag at Manteo is an estuary of Roanoke Sound. These waters are not used for public bathing but are used on occasion by individuals for swimming. The bay, however, is becoming very popular for water skiing, although it is not a town-sponsored project. The untreated domestic sewage from the Town of Manteo is discharged into the bay and, in addition, several establishments located on Doughs Creek discharge untreated wastes into the creek which in turn drains to Shallowbag Bay. Samples were taken from a series of 22 grid points in the bay and Doughs Creek. The analyses ranged from a low of <3.6 coliform bacteria (M.P.N.) per 100 ml. at the mouth of the bay to a high of 110,000 near the outfall. All bathing and water skiing should be discouraged in the bay and especially in the area west of a line from Doughs Creek to Scarboro Creek, until corrective measures are taken by the Town of Manteo.

Pasquotank County

There are no public bathing areas located within this county; however, Pasquotank River is used quite extensively for water skiing. Beginning in

the summer of 1958, the Chamber of Commerce sponsored a water-skiing school that was and is held on Pasquotank River near Hospital Point. This point lies downstream from a large part of the untreated domestic sewage and industrial waste from Elizabeth City and between two of their major outfalls. Sampling Station 26-C was located 100 feet off-shore at Hospital Point, while Sampling Station 26-D was located 100 feet off-shore at the foot of Fairfax Street which is a short distance below Hospital Point and below all major outfalls from Elizabeth City. Five samples were collected from the river at each of these points from June 13, 1957, to October 9, 1958. The water at Sampling Station 26-C contained an average of 45,000 coliform bacteria (M.P.N.) per 100 ml., with a range from 930 to >110,000, while that at Sampling Station 26-D contained an average of 29,000 coliform bacteria (M.P.N.) per 100 ml., with a range from 230 to 93,000. Obviously, such large numbers of coliform bacteria greatly exceed the numbers normally considered safe for outdoor bathing waters and waters considered safe for those who enjoy water skiing.

A sports event of great pride to the City is the annual International Cup Regatta held in October on the Pasquotank River. This event includes boat racing and a parade of boats of all types and sizes. While the act of boating in such polluted waters is hardly a public health hazard to those enjoying this pleasure, the visible evidence of sewage found along the water front is not a wholesome sight to those who come to enjoy the natural assets of the City. Many of the craft visiting these waters at such time, however, do have overboard toilets and add to the pollution in the river. In fact, similiar craft and commercial vessels with overboard toilets, which are stationed in the area or frequently visit same, discharge untreated sewage in or near the area used for water skiing which does create a public health hazard. These waters are also subject to pollution from street drainage from the heart of the City.

It becomes evident, therefore, that water skiing or bathing in the general area of the City constitutes a public health hazard which will not be eliminated entirely when the sewage and industrial waste are collected and treated at a site designed to protect the health of the inhabitants of the City and those downstream areas suitable for public bathing. The State Stream Sanitation Committee has given careful thought to these conditions and is, therefore, proposing an "SC" classification for the river waters in the immediate vicinity of the City and an "SB" classification for the waters from a line across the river from Hospital Point to Cobb Point downstream to a line across the river from Pool Point to Miller Point in order to protect those waters suitable for public bathing.

Perquimans County

Although there are no general bathing and water skiing in the Perquimans River at Hertford, a study of the condition of the river at this point may help to show the public health hazard caused by discharge of untreated domestic sewage from the Town of Hertford. Sewage from the multiple outfalls has caused a coliform bacteria density as high as 15,000 (M.P.N.) per 100 ml. in the river at U. S. Highway 17 bridge. River water collected at the several sampling points at Sampling Station 46 which were located at various points between the highway bridge and Raccoon Creek, contained coliform bacteria in numbers as high as 24,000 (M.P.N.) per 100 ml. It is obvious, from the results obtained from these samples, that bathing and water skiing should be discouraged in these waters. There are, however, three public bathing areas located on the Perquimans River below the Town of Hertford which are described as follows:

Hertford Beach is located on the west bank of Perquimans River 4.3 river miles below U. S. Highway 17 bridge at the Town of Hertford in a slight indentation of the shore. The beach has facilities for bathing, such as a bathhouse, restrooms, and a pier that can be used for diving as well as a boat dock. There are also several private homes located adjacent to the water. The analyses of all samples taken at the beach were within the range, normally considered safe for public outdoor bathing waters except one collected at the beginning of the upstream section.

Southern Shores Beach is also located on the west bank of Perquimans River 5.3 river miles below U. S. Highway 17 bridge at the Town of Hertford. This beach, at one time, had facilities for public bathing, but they have been abandoned. There are a few homes located near the water the inhabitants of which use the beach in this vicinity. The location of the beach is similar to Hertford Beach in that it too is located in a slight, natural shore indention. Generally, the samples collected indicated bathing water of good quality; however, samples taken at two points showed the coliform bacteria density to be as high as 4,300 (M.P.N.) per 100 ml.

Camp Perry is located on the east bank of Perquimans River 9.1 river miles below U. S. Highway 17 bridge at the Town of Hertford. The camp is operated by the Boy Scouts of the Elizabeth City area as a weekend camp and is used for camporees and other events. The river is used for boating, fishing, and bathing. There is a shallow well at the camp but drinking water is generally brought from home in canteens. Domestic sewage is disposed of by use of pit privies. The camp is used by 50 - 75 boys at one time. The bathing area is located in a protected cove on the river below fairly high banks. The analyses of the samples collected of the beach water showed that the coliform bacteria were in numbers well within the range normally considered to be safe for public outdoor bathing waters.

The condition of Perquimans River in the general area of the Town is similar to that existing in the Pasquotank River at Elizabeth City, although the degree of pollution prevalent in the river itself is considerably less due to the smaller population living in the Town. Nevertheless, the river is not suitable for either bathing or water skiing in the immediate vicinity of the Town. As noted above, the bathing water at Camp Perry was found to be of acceptable quality at the time of sampling, while at Hertford Beach and Southern Shores Beach the water on one occasion contained coliform bacteria in numbers exceeding those normally considered safe for outdoor bathing waters. The samples reflecting these adverse conditions were collected on October 8, 1957, following an accumulated rainfall of 4.23 inches on October 5 and 6, 1957, which resulted in a more rapid movement of the pollution from Hertford to the downstream bathing areas. While these adverse conditions may have been due in part to runoff from the immediate populated areas, the discharge of untreated sewage from the Town of Hertford must by necessity be considered a public health hazard to these bathing waters, particularly those nearest to the Town.

The State Stream Sanitation Committee has taken careful note of the conditions existing in the general area of the Town of Hertford and is, therefore, proposing an "SC" classification for the river in the general area of the Town and an "SB" classification for the waters from a line across the river from Barrow Point to Ferry Point downstream to Albemarle Sound in order to protect those waters suitable for public bathing.

Tyrrell County

This county contains only one known public bathing area, the Bull Bay area, located near the mouth of Scuppernong River in Albemarle Sound. It is protected from any heavy weather from the sound and has a natural sandy beach that gently slopes approximately ½ of a mile into the sound before it reaches a 6-foot depth. This area is building up with private permanent and vacation homes, which are maintaining their own private beaches. The one public bathing area is the Norman Smith Legion Beach on Albemarle Sound just east of the mouth of Scuppernong River. There is a concession stand with restrooms, a pier for either diving or boat docking, a bathhouse, and picnic tables for public use. Domestic water is obtained from a well, while domestic sewage is disposed of by use of a septic tank with nitrification lines. Samples were taken at 50-foot intervals for 200 feet along the beach. The results obtained from the samples ranged from <3.6 coliform bacteria (M.P.N.) per 100 ml. to a high of only 230, all indicating that the water is of good quality for public outdoor bathing.

Washington County

This county, as Tyrrell County, has only one public bathing place within the Basin. While it has a long shore line along Albemarle Sound and Bull Bay which is becoming a popular place to build permanent and vacation homes, the area most suitable for public bathing appears to be at the existing public bathing area at Albemarle Beach, located on the sound near the little fishing town of Mackeys. The beach has public facilities, which include four piers used for both diving and boat docking, a concession stand with bathhouses, restrooms, and picnic tables. There are also 25 - 30 homes located on and around the beach area. The beach is very popular in this area and attracts large crowds, especially on weekends. Samples were taken from the end of the three western most piers. The results of the analyses showed that the beach water was of satisfactory quality for public bathing.

SUMMARY DISCUSSION OF RECREATION AREAS

The importance and impact of recreation in the Pasquotank River Basin cannot be emphasized too strongly. A large part of the economic life of the entire Basin is built around the recreational areas, both natural and man-made, and any improvements to the transportation facilities within the Basin will hasten the development of these areas. They are an attraction to vacationers and sportsmen throughout the State, as well as the Nation. A large majority of the streams and bodies of water in the Basin abound in fish. Both fresh and salt water species, in some localities, can be caught within walking distanch of each other. One of the great attractions for the deep sea fisherman is the Gulf Stream located only 12 miles off Cape Hatteras. Most of these streams and bodies of water are as yet untouched by domestic pollution; however, several areas have been polluted and the bathing areas below the City of Elizabeth City and the Town of Hertford are constantly threatened by the discharge of untreated wastes from these municipalities. In a few areas, shellfishing waters are in jeopardy and already only rough fish are found in the waters in the immediate vicinity of Elizabeth City which is probably also the case for the waters adjacent to the Town of Hertford. The eastern boundary of the Basin consists of approximately 85 miles of natural beach area, of which only about 20 miles are fully developed. The developed area consists of the Kitty Hawk, Kill Devil Hills, and Nags Head communities, and merges into the fringes of the Town of Manteo. For those who prefer fresh water bathing, there are many well-protected beaches on Albemarle Sound and its tributaries. The ocean beaches are still free of pollution, but the domestic wastes from the

heavy concentration of population in the beach areas during the vacation season may eventually saturate the sand with sewage from the numerous subsurface septic tank drainlines and pose a hazard to both the bathing areas and water supplies. The developers of these areas should include in their future plans some type of community sewage treatment facilities and, where possible, systems of public water supplies.

GENERAL SURVEY FINDINGS

The Pasquotank River Basin is centered about Albemarle Sound into which all of the streams and sounds flow, or are directly connected, and does not lend itself to division into segments as is normally the practice in discussing the basins with a major river such as that of the Roanoke River Basin; therefore, the points of significant sources of pollution will be discussed in a counter-clockwise manner around Albemarle Sound, beginning with the northeast corner of the Basin. Additional water and land uses, together with data relative to these uses, are summarized in Table 2, Public Ground Water Supplies; Table 3, Industrial Ground Water Supplies; Table 4, Points of Significant Sources of Pollution; Table 5, Schools; Table 6, Prison Camps; Table 7, Analytical Results; and, Table 8, Recommended Classifications.

General Statement

That portion of Albemarle Sound located in the Pasquotank River Basin is presently not receiving the direct discharge of any domestic sewage or industrial waste. The Navy Auxiliary Air Station, located on the North Shore of the Sound and near the western end, was discharging primary treated waste into the Sound at the time of the stream studies from a population of 1,200 but the base has been deactivated since then. The U. S. Navy has constructed a primary type treatment plant to treat the sewage from a population of 2,500 at the Harvy Neck Seaplane Base, so called, located on the Sound at the mouth of Perquimans River, but construction of the Base was stopped and it has never been activated. All persons interested in this Base have been making a determined effort to find a suitable use for this property which has a number of tangible advantages and it is the earnest hope of the State Stream Sanitation Committee that the Base will soon be put to a suitable use. This statement also applies to the deactivated Navy Auxiliary Air Station.

The Basin has three principal interstate streams. These are North Landing River, Northwest River and the Dismal Swamp section of the Intracoastal Waterway. The main thoroughfare of the Intracoastal Waterway is in North Landing River. In addition there are many smaller drainage canals and bays and inlets connected to Back Bay and Knotts Island Channel that cross the Virginia State line at various points. Although these streams are characterized by low pH and a relatively low dissolved oxygen content, this is the result of swamp water and not sewage or industrial wastes.

In addition to Albemarle Sound, Currituck Sound and five rivers are free from pollution. These are North Landing River, as indicated above, North River, Little River, Yeopim River, and Alligator River. This is not surprising as the streams lie in sparsely populated and relatively undeveloped areas in large measure. These streams are used quite extensively for sport and commercial fishing.

The agricultural development of the Basin in large measure is located north of Albemarle Sound. Here the land is slightly higher than that on the south side and systems of drainage canals have drained the land in many places enough to produce good farm or pasture land. The most highly developed land for agricultural pursuits lies between North River and Currituck Sound in the vicinity of Moyock and in the southern portions of Pasquotank, Perquimans, and Camden Counties. The Great Dismal Swamp in the northwest section of the basin still blocks the advance of agriculture and industry in this direction. The lands south of Albemarle Sound have somewhat lower elevations, generally less

than 5 feet above mean sealevel. If the lands could be drained, the rich and highly organic soil would enhance the economy of this area. A good example of such development are the Scuppernong Farms along Scuppernong River and Lake Phelps. It is heartening to note a movement toward the further development of these lowlands in recent times.

The industrial development in the Basin, as well as the development of agriculture, has been confined, up to the present time, to that section north of Albemarle Sound, exclusive of various fisheries and fish processing plants. The center of the industrial development is in the Elizabeth City area where the labor supply has been found to meet present needs, the sites are well-drained, and where water of suitable quality for the particular needs has thus far been made available from ground sources. On the other hand, the lowlands south of the Sound, the smaller labor supply, and the question of water supply has discouraged industrial development, other than that associated with the fisheries, which are a very important part of the economy of this area.

A matter of great interest to all the people of the Pasquotank River Basin is the question of further industrial development which depends in large measure upon an adequate water supply of suitable quality. The question of salt water intrusion has been discussed thoroughly elsewhere in this report, which in many cases precludes the use of surface water for irrigation and for manufacturing as well as for domestic purposes. While this is so, quite possibly, industries requiring large amounts of cooling water by judicious installation of intakes and use of non-corrosive pipe could be located at carefully selected sites and so use the water from the rivers and sounds. As an example, the stream studies in 1957 showed that during the summer, the average chloride content of Albemarle Sound water at N. C. Highway 32 bridge at middepth was 720 ppm. On the other hand tests made by the U. S. Geological Survey in the late fall and winter of 1957 and 1958 at this same site showed that the chlorides at the surface was less than 10 ppm at times but as high as 12,000 ppm at the bottom. It becomes obvious, therefore, while the possibility of using such water exists, an effort to use the water should be undertaken only after very careful study. It should be noted that the possibility of obtaining additional ground water supplies should not be overlooked, as earlier reconnaissance studies by the U. S. Geological Survey have not been fully evaluated by exploration in the various areas of the Basin.

The availability of water for waste disposal is also a matter of concern in considering the industrial development of the Basin. None of the rivers which enter the sounds, excluding the Roanoke and the Chowan which enter Albemarle Sound outside the limits of the Pasquotank River Basin, have extensive watersheds or drainage areas. Consequently, studies of the streams within this Basin, during periods of drouth, show that the inflow of dilution water is very small or nil. As a result the movement of wastes and their admixture with the receiving waters is dependent upon wind action to a large extent. Wind tides also may carry polluted waters upstream and cross-stream as well as downstream and thus expose seemingly safe recreational areas and fisheries to pollution. The type of industry selected for the Basin, if the presently unpolluted waters are to be protected for their best uses and if the polluted waters to be described below are to be further protected after the necessary action has been taken, requires careful consideration as to the amount and character of waste produced. Dry-type industries or industries requiring only large amounts of non-polluted cooling water should be given first consideration.

The remaining major streams and sounds and their tributaries, which have been found to be polluted to various degrees in certain areas, will now be

discussed in some detail. For convenience, the discussion will be by sections as follows:

SECTION I. PASQUOTANK RIVER AND ITS TRIBUTARIES

The upper reaches of Pasquotank River down to the mouth of Knobbs Creek are free of pollution, other than that due to natural conditions. This section is principally used for sport fishing, agriculture and navigation. Below this point, there are seven points of pollution, including the untreated waste from the Globe Fish Company and the partially treated sewage from Weeksville High School, and three bathing areas. The bathing areas have been previously discussed in another section of this report together with the effects of the upstream pollution. The major sources of pollution at the time of the stream study had an estimated flow of 1.5 MGD, a population equivalent (P.E.) of 19,927 before treatment, and a P.E. of 19,507 after treatment. This represented a reduction in pollution of but 2%. At the present time one military establishment has been placed on a standby basis and the P.E. reaching the streams has been somewhat reduced. The points of pollution are described in downstream order in some detail as follows:

Brothers Abbattoir, located northwest of Elizabeth City on an unnamed tributary to Knobbs Creek 4.9 stream miles above Pasquotank River, is engaged in the slaughtering of cattle and hogs. The operation is part-time, two to three days per week, for an average of five hours each operating day. During the months of October through December, custom hog slaughtering is the major activity. While the domestic sewage was satisfactorily disposed of by means of a septic tank and nitrification field, the waste from the slaughtering operations at the time of the survey was discharged from the kill floor through a four-inch outfall, approximately 30 feet in length, to a tributary to Knobbs Creek. After the stream study period a blood and grease removal unit was installed. The construction and maintenance of this unit is very poor; therefore, the condition in the stream did not change appreciably. Knobbs Creek and its tributaries are subject to wind tide action, which carries the waste upstream for about 100 feet above the point of discharge in this instance. Solids, such as coagulated blood and animal tissues, are deposited on the bottom and along the banks of the stream in the form of sludge for approximately 100 feet above and about 300 feet below, the outfall. These decomposing solids created a very pronounced nuisance in the stream.

The stream, at a sampling station about 75 feet above the point of waste discharge, had an average dissolved oxygen content of 0.1 ppm, an average 5-day BOD of 5.7 ppm, and an average coliform bacteria content of 890 (M.P.N.) per 100 ml. The low dissolved oxygen and high BOD indicated that the waste was carried upstream at times as noted previously. At a sampling station in the stream located 75 feet below the outfall, the average dissolved oxygen content of the water decreased to 0.0 ppm, while the BOD increased to an average of 15 ppm, and the average coliform bacteria content to 7,100 (M.P.N.) per 100 ml., all of which confirmed the visible adverse conditions in the stream. Stations downstream on Knobbs Creek indicated a slight improvement; however, it was extremely slow. The discharge of this waste to a tributary of Knobbs Creek has an adverse affect on the stream, creates local nuisance conditions, and further pollutes Pasquotank River. In order that the Creek be protected for its best usage, steps should be taken to provide adequate and efficient treatment of this waste.

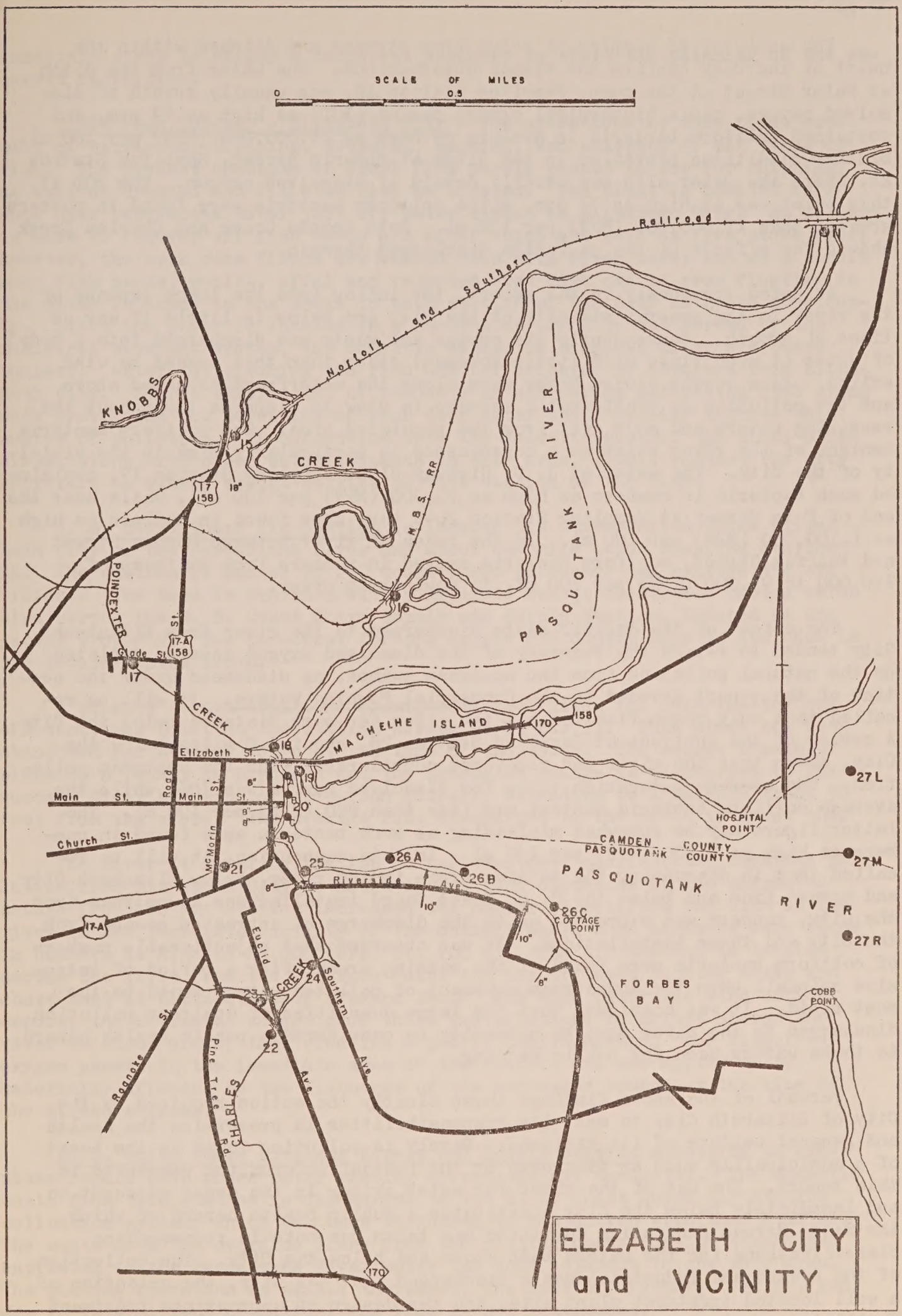
Elizabeth City Sewage and Industrial Waste Problem

The City of Elizabeth City has a sewage collection system that discharges untreated domestic sewage and industrial waste, with a volume of 1.319 MGD and a population equivalent (P.E.) of 18,063, into Charles Creek, Knobbs Creek, Pasquotank River, and storm drains via seven municipal outfalls and numerous private outfalls. In addition to this, the old water intake, located on Knobbs Creek, is now being used as a sewage outfall line. These outfalls embrace a river frontage of 2.3 miles from Knobbs Creek to the last outfall below Hospital Point. The location and size of the major outfalls are listed as follows:

Pennsylvania Avenue at Knobbs Creek (old water intake)	18"
End of Colonial Street	8"
End of Main Street	8"
End of Fearing Street	8"
Shephard Street at Charles Creek	8"
Riverside Avenue near Agawam Street	10"
End of Raleigh Street	10"
Caroline Avenue near Hospital	8"

These outfalls and their relationship to the sampling stations are noted on the map of the Elizabeth City area on the opposite page.

The entire length of the above-mentioned river frontage contains numerous private outfalls from residences and water front business establishments. As many as 44 of these were noted along the river during a period of high water and quite possibly additional ones would be exposed under low water conditions. Visual observations of the river indicated a dark gray color and floating matter near the shore, as well as oil slicks at various places. There are several places along the streams where the discharge of wastes creates conditions that appear to have a greater adverse affect upon the streams than at others. Located on Knobbs Creek just outside of the City Limits are the Mengel Company, Forman Manufacturing Company, and L. R. Forman and Son, all of which deal in lumber or wood products. There are bark, sawdust, and other debris from the process and wood yards that have been discharged, or washed, into the stream, causing a heavy skum of wood particles and oil to cover large portions of the stream. At the ice plant, there is an unusually heavy layer of foam below the outfalls. Adjacent to the Globe Fish Company, which will be described below in more detail, there are fish offal, blood, bits of flesh, and whole dead fish floating in the water, causing objectionable odors and unsightly conditions. Near the Riverside Avenue outfall and in the vicinity of the shipyard and Coast Guard Station, there are usually large oil slicks and noticeable floating solids. There are two principal ditches that carry storm drainage from the business section of town to the river on which are located many private outfalls and over-board toilets. The discharges from these sources of waste, in warm weather, cause offensive odors and unsightly conditions, as well as create a health hazard. There are flood gates on these ditches to hold the river back during high water, making it necessary to pump the storm water and sewage into the river. When these pumps are in operation, the force of the water from the pumps churns the sludge from the bottom of the river, causing a distinct sewage odor to penetrate the city. This odor is also produced by the frequent turnover of the river. Brief mention is made for record of the discharge of an unknown amount of wash water from the McPherson Bottling Company to a tributary to Knobbs Creek. This matter requires further investigation.


SCALE OF MILES
0
0.5
1
Norfolk and Southern Railroad
KNOBBS
CREEK
N.B.S. RR
PASQUOTANK RIVER
POINDEXTER
Glade St.
17
17-A
158
CREEK
MACHELHE ISLAND
170
158
Elizabeth St.
Main St.
Main St.
Church St.
McMorin St.
Road
Riverside Ave
17-A
Euclid
CREEK
Southern Ave
Roanoke St.
Pine Tree Rd
CHARLES
Ave
HOSPITAL POINT
CAMDEN COUNTY
PASQUOTANK COUNTY
PASQUOTANK RIVER
COTTAGE POINT
FORBES BAY
COBB POINT
27L
27M
27R
26A
26B
26C
15
16
17
18
19
20
21
22
23
24
25
ELIZABETH CITY and VICINITY

The analyses of samples of water from streams and ditches within the heart of the City confirm the visual observations. The water from the ditch at Water Street at the pump, Sampling Station 18, was usually devoid of dissolved oxygen, had a biochemical oxygen demand (BOD) as high as 49 ppm, and contained coliform bacteria in numbers as high as 11,000,000 (MPN) per 100 ml. Similar conditions prevailed in the ditch at McMorin Street, Sampling Station 21, where the water also was usually devoid of dissolved oxygen. The BOD at this point was as high as 73 ppm, while coliform bacteria were found in numbers greater than 11,000,000 (MPN) per 100 ml. Both Knobbs Creek and Charles Creek showed the effects of the pollution discharged therein.

As noted previously in the report, the inflow into the large expanse of the river in the general vicinity of the City and below is little if any at times of drouth. Consequently the sewage and waste are discharged into a body of water at such times with little movement other than that caused by wind action. As a result sludge banks form along the waterfront as noted above and the pollution in considerable measure is slow to disperse throughout the receiving waters and move away from the populated area. The coliform bacteria content of the river water as a consequence is particularly high in the vicinity of the City. The water at U. S. Highway #158, Sampling Station 19, contained such bacteria in numbers as high as 75,000 (MPN) per 100 ml., while near the end of Main Street at Sampling Station 20-C they were found in numbers as high as 1,100,000 (MPN) per 100 ml. In the reach of river between Morgan Street and Fairfax Street, coliform bacteria ranged in numbers from maximums of 240,000 to 93,000 (MPN) per 100 ml. in downstream order.

The effect of the organic waste discharged to the river from Elizabeth City tended to retard the recovery of the dissolved oxygen assets, depleted by the natural pollution from the upstream swamps, as discussed under the section of the report devoted to the Commercial Fishing Waters. It will be recalled that only rough fish inhabit the river for some distance below the City. A review of the analyses at Sampling Station 28, about 3.0 miles below the City, shows that the river had recovered considerably from the upstream pollution. The average saturation value for dissolved oxygen was 78%, while the average coliform bacteria content was less than 890 (MPN) per 100 ml. The latter figure may be somewhat misleading as such bacteria were found in numbers as high as 4,300 (MPN) per 100 ml. In this connection, it will be recalled that in discussing the bathing areas in the river, below Elizabeth City and across from and below the U. S. Coast Guard installations downstream from the City, concern was expressed as to the discharge of untreated sewage from the City and these installations. It was observed that objectionable numbers of coliform bacteria were found at the bathing areas after a period of intensive rainfall when the downstream movement of polluted waters would be the most rapid. It was concluded that the large quantities of upstream pollution discharged to the river must by necessity be considered a public health hazard to these waters used for public bathing.

Perusal of the above findings shows clearly the action required by the City of Elizabeth City to meet its responsibilities in preserving the health and general welfare of its citizens. Rarely is pollution found in the heart of a municipality such as disclosed by the factual information presented in this report. The use of the river for water skiing in the areas adjacent to and immediately below the City constitutes a public health hazard of which the State Stream Sanitation Committee has taken due note in recommending classifications for the waters both above and below the City. The collection of the sewage and industrial waste discharged from the City, the selection of a well located treatment plant site, and the design of appropriate treatment facilities require sound engineering advice and design. The City should take

immediate steps to employ a competent engineer to start the planning of the required facilities.

Globe Fish Company - Elizabeth City - The operations at this plant consist of receiving, cleaning, dressing, packing, and shipping of all types of fish. The product consists of fresh fish merely packed in ice for shipping, as well as dressed and filleted fish as ordered. The plant is located on a dock over Pasquotank River just off Water Street in Elizabeth City. An attempt is made to recover all fish heads and offal which are sold as live stock feed; however, the work room floors are washed down with river water and as a result many fish heads, scales, offal and rejected dead fish can be seen floating in the water adjacent to the docks in this section of the City as noted previously. Since the plant is located in a section of the City not served by the municipal sewerage system, the domestic sewage is disposed of by overboard toilets. Water for cleaning the fish and for drinking is obtained from Elizabeth City. Strict enforcement of recovery of all refuge and wasted fish along with provisions for screening of wash down water would greatly improve this source of pollution. In connection with the domestic sewage, the plant officials, along with other establishments in this area, should request the City officials to extend sewage service to this section of the City.

U. S. Coast Guard Air Station is located 3.9 stream miles below Elizabeth City on the Pasquotank River and about one mile below Sampling Station 28. The station is manned by 250 Coast Guard personnel and employs 350 civilians. The Base is provided with a separate sewage collection system which also serves the U. S. Coast Guard Repair and Supply Station, located on adjacent property. The personnel for the Repair and Supply Base is included in the totals stated above.

A primary sewage treatment plant, with facilities for chlorinating the effluent, was built at the station during World War II. This plant has been abandoned for several years at the time of the study. The sewage treatment plant as a result is bypassed and the untreated sewage is discharged to Pasquotank River by means of a 10-inch outfall, extending to a manhole about 30 feet from the shore. The average P.E. discharged to the river is about 300.

The river at Sampling Station 28 had recovered considerably from the pollution from Elizabeth City as noted above. The discharge of the untreated sewage from the Air Station increased the number of coliform bacteria in the river in the immediate vicinity of the outfall where such bacteria were found in numbers as high as 24,000 (MPN) per 100 ml. The Air Station is located across the river from the Treasure Point and Taylor Beach bathing areas and above that at Elizabeth City (Texaco Beach) and when favorable wind action occurs, the untreated sewage from these installations is driven across the river to these areas, thus creating a public health hazard. The dissolved oxygen assets in the immediate area of the outfall did not appear to be materially affected by the discharge of the untreated sewage at the time of the stream studies.

U. S. Coast Guard Airplane Repair and Supply Station maintains an airplane repair shop where metal plating operations are conducted. The domestic waste from this station is discharged to the U. S. Coast Guard Air Station collection system, which has been discussed in connection with that Station. The waste from the overflow lines from the plating operations is discharged untreated to the Pasquotank River under the dock adjacent to the shop area. The plating operation is small; therefore, the rate of discharge is low, and, due to intermittent operation, the flow is not continuous.

Analysis of samples collected in the area in which this waste is discharged indicated the presence of copper, total chromium, and cyanide. The presence of these toxic materials are inimical to fish; therefore, treatment should be provided to remove them.

Much of the waste from Elizabeth City and the waste from the U. S. Coast Guard installations are discharged into the Pasquotank River commercial fishing waters. The river at Sampling Station 33, some distance below these waste discharges, showed good recovery at the time of the stream studies; however, a fish kill was reported in the vicinity of this station in 1956, as discussed under Commercial Fishing Waters, when the dissolved oxygen was less than 2.0 ppm. As noted in that discussion, such kills can be anticipated to happen again until such time as the upstream polluters have taken appropriate action.

Weeksville High School, with an enrollment of 375, is located in the Community of Weeksville which lies on New Begun Creek. The school and gymnasium are each served by a septic tank and nitrification field, while the lunch room is also served by a grease trap. The individual sewage treatment facilities were operating properly, except that serving the school. In this case, the nitrification line was broken which caused the partially treated sewage to be discharged to a swamp and then into New Begun Creek. This discharge created a local nuisance and offensive odors. The Board of Education of Pasquotank County should take steps to relocate the malfunctioning nitrification line in order to relieve the objectionable conditions.

U. S. Naval Air Facility, Weeksville - When the stream study began in the summer of 1957, this base was in full operation with a population of 1,200 people. The domestic sewage was collected in a separate type system and treated in a primary type treatment plant consisting of an Imhoff tank and sludge beds, with provisions for chlorinating the plant effluent. The effluent was discharged to Pailin Creek which flows into New Begun Creek, a tributary of Pasquotank River. At that time the plant was well maintained and was doing the job expected of this type of plant, other than the fact that the chlorinator was not in use. This resulted in Pailin Creek having an average coliform bacteria content of 7,400 (MPN) per 100 ml., with a high of 24,000. The water in New Begun Creek, at Sampling Station 36, about 0.5 of a mile below Pailin Creek showed little adverse effect from the pollution in Pailin Creek at the time the stream studies were conducted; however, the coliform bacteria in Pailin Creek could have been further reduced with effective chlorination.

During 1957, the base was ordered closed, and the personnel began leaving in mid-July; however, it was left on a standby basis with a maintenance crew of 50. The nearby housing units are occupied by 150 people who are employed at the U. S. Coast Guard Air Station. The existing facilities are also used by other governmental agencies at intervals. The sewage treatment plant continues to serve the housing units and maintenance crew; however, it is poorly maintained and operated. The small load has increased the detention time, thereby causing the waste to become septic. The grounds are also badly in need of cleaning. If this Imhoff tank is to be continued in use, the detention time could be reduced by the introduction of river water, or by recirculation.

SECTION II. PERQUIMANS RIVER AND ITS TRIBUTARIES

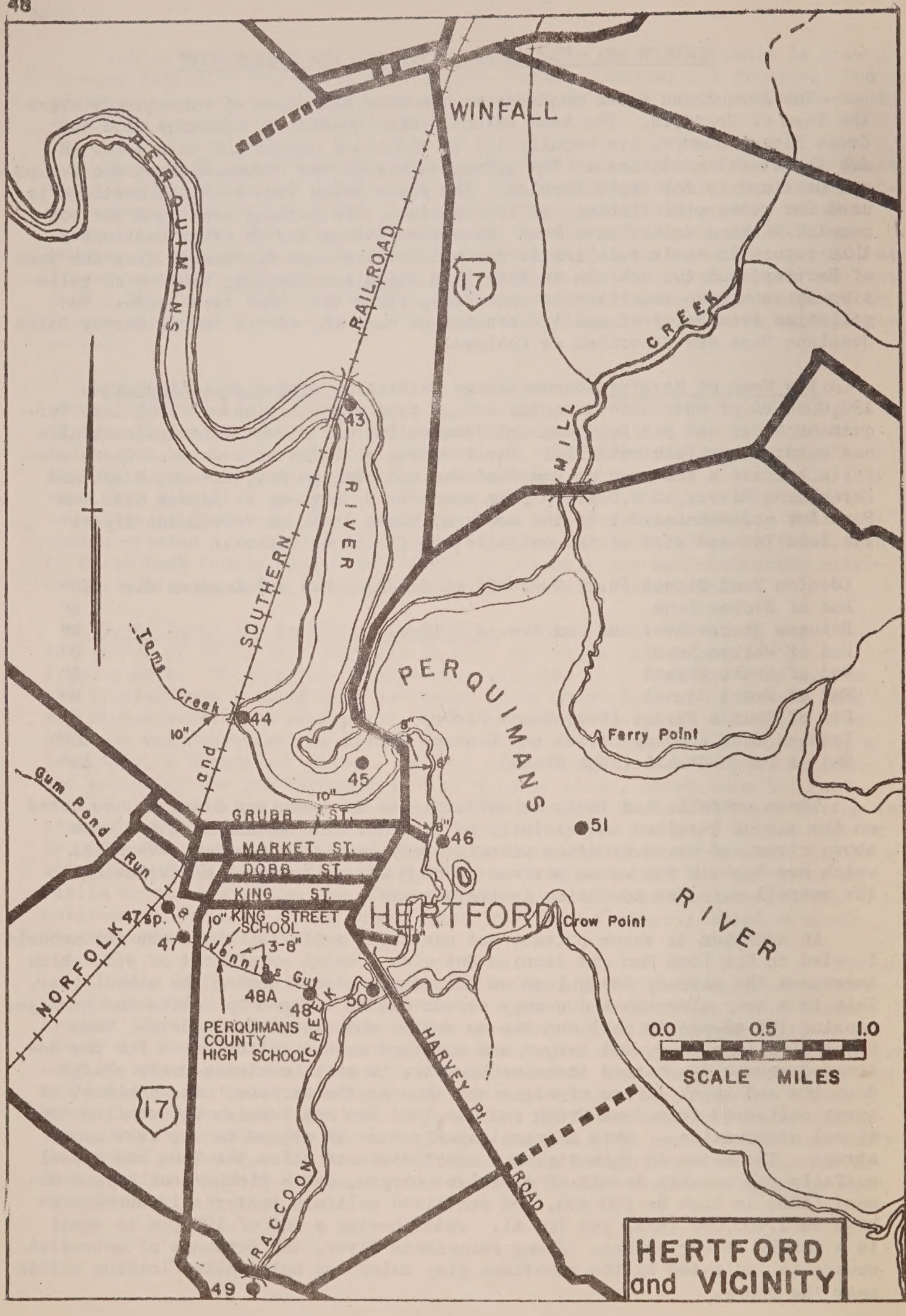
The Perquimans River receives no man-made pollution of consequence above the Town of Hertford. The head waters, which consist of drainage from the Great Dismal Swamps, are usually low in dissolved oxygen and have a low pH due to natural conditions. The principal use of the stream between the swamps and Hertford is for sport fishing. The river below Crow Point at Hertford is used for commercial fishing and for bathing. The bathing areas and the commercial fishing waters have been discussed previously in other sections of this report in their relation to the untreated sewage discharged from the Town of Hertford and two schools in this Town which are the only sources of pollution by sewage on the river at this time, other than that from boats. The pollution from Hertford and the conditions existing at the former Harvey Point Seaplane Base are described as follows:

The Town of Hertford has a sewage collection system that discharges 170,000 GPD of untreated domestic sewage from a population of 2,100 into Perquimans River and Gum Pond Run and Jennies Gut via eleven municipal outfalls and numerous private outfalls. The Town has no industrial waste. These outfalls embrace a frontage on Gum Pond Run and Jennies Gut, Raccoon Creek and Perquimans River, of 2.0 miles from where U. S. Highway 17 passes over Gum Pond Run and Jennies Gut to the mouth of Tom's Creek on Perquimans River. The location and size of the outfalls are listed as follows:

Edenton Road Street (U.S. Hwy. 17) at Gum Pond Run and Jennies Gut	10"
End of Stokes Lane	8"
Between Stokes Ave. and Gum Ave. - 3 lines	8"
End of Whites Lane	8"
End of Grubb Street	8"
End of Front Street	8"
End of Church Street (Perquimans River)	8"
Between East Academy Street and Convent Garden	10"
End of Perry Street (Toms Creek)	10"

These outfalls and their relationship to the sampling stations are noted on the map of Hertford and vicinity on page 48. The entire length of the above river and creek frontage contains many private outfalls, several of which are beneath the water surface at high water, but each contributing to the overall nuisance condition in the streams.

In addition to these private and municipal outfalls, there are two schools located on Gum Pond Run and Jennies Gut with a total enrollment of 968, which increases the already heavy load on this small stream during the school year. This is a very sluggish and swampy stream easily clogged by debris and garbage, causing the sewage to pool and become septic and create foul odors. Toms Creek also is swampy, but larger and contains more dilution water for the untreated sewage discharged therein; however, it still contains heavy sludge deposits and thick layers of algae and skum on the surface. The analyses of water collected from Toms Creek and Gum Pond Run and Jennies Gut confirm the visual observations. This is particularly true in regard to the last named stream. The water in this stream a short distance below the Town and school outfalls was usually devoid of dissolved oxygen, had a biochemical oxygen demand (BOD) as high as 190 ppm, and contained coliform bacteria in numbers as high as 2,400,000 (MPN) per 100 ml. Water having a BOD of 190 ppm is equal to a fairly strong sewage. Along Perquimans River, the presence of untreated sewage is indicated by the sometimes gray color and noticeable floating solids near the shore.


WINFALL
PERQUIMANS
RAILROAD
17
CREEK
MILL
43
RIVER
SOUTHERN
Toms Creek
10"
44
and
PERQUIMANS
Ferry Point
45
8"
6"
10"
Gum Pond Run
GRUBB ST.
MARKET ST.
DOBB ST.
KING ST.
46
51
HERTFORD
Crow Point
RIVER
47 sp.
47
10" KING STREET SCHOOL
3-8"
Jennies Gut
48A
48
50
NORFOLK
PERQUIMANS COUNTY HIGH SCHOOL
CREEK
HARVEY Pt. ROAD
0.0
0.5
1.0
SCALE MILES
17
RACCOON
49
HERTFORD and VICINITY

The stream flow conditions in the Perquimans River are similar to those in the Pasquotank River, except the former has a much smaller watershed. The inflow of water into the wider expanses of Perquimans River near and below Hertford is little if any in times of drouth as was noted in the case of the Pasquotank River below Elizabeth City. As a result, the dispersal of the sewage from Hertford into the wider expanses of Perquimans River, where it is diluted, depends upon wind action to a large extent. As might be expected under these conditions, coliform bacteria are found in rather large numbers in that portion of the river adjacent to the populated area.

At U. S. Highway 17 bridge, Sampling Station 45, below part of the pollution from the Town, coliform bacteria were found in numbers up to 15,000 (MPN) per 100 ml., while off-shore at Sampling Station 46, near the residential area, these bacteria were found in numbers as high as 24,000 (MPN) per 100 ml. At Sampling Station 51, a short distance below the mouth of Racoon Creek, the coliform bacteria are found in greatly reduced numbers. Although this pollution becomes greatly diluted below Crow Point, it does not reduce the potential hazard to the present bathing areas, potential bathing areas, or the fishing waters downstream below this point. As noted previously in the report, objectionable numbers of coliform bacteria were found in the nearest bathing areas following a period of intensive rainfall when the movement of the Hertford pollution to downstream points was the most rapid. The organic matter in the sewage from Hertford tended to delay the recovery of the dissolved oxygen assets of the river, which had previously been reduced by the natural upstream conditions.

The Town of Hertford should, as quickly as possible, begin to provide treatment necessary to remove the nuisance conditions and health hazards present in the streams in the Hertford area and to protect the downstream recreational areas. The collection of the sewage, the location of the treatment plant site, and the design of appropriate treatment facilities require sound engineering advice. The Town should, therefore, employ a competent consulting engineer at an early date. In planning the above facilities, the Town should give consideration to connecting the two schools described below, which are now discharging untreated sewage into Gum Pond Run and Jennies Gut, to the Town system.

King Street School - This school has an enrollment of 433, and is supplied with water from the Town of Hertford. The sewage from the school is discharged by means of a 4" outfall to Gum Pond Run and Jennies Gut, which flows to Raccoon Creek, thence to Perquimans River. The discharge of this waste to Gum Pond Run and Jennies Gut, which provides very little dilution under low-flow conditions, adds to the nuisance conditions and health hazards created by the discharge of untreated sewage from the Town.

Perquimans County High School, with a total enrollment of 535, is also located in the Town of Hertford. The waste from the school and lunch room is discharged to Gum Pond Run and Jennies Gut which is in a foul condition as noted above. The discharge of this waste and the other wastes into a small stream located adjacent to school property is a poor public health practice.

The Perquimans County Board of Education should consult with the Town of Hertford relative to accepting the wastes from the two schools for disposal into the Town's sewerage system. If this proves to be impracticable, then the Board should take immediate steps to provide adequate sewage treatment for both schools.

Harvey Point Seaplane Base - At the time of the stream studies in 1957, construction had not yet begun on this base which lies at the junction of Perquimans River with Albemarle Sound. The old facilities, which were left from the old World War II base, were being used as a mine raking station and were manned by a crew of only 10 men. The water was obtained from a well, while the sewage was disposed of by a septic tank and nitrification lines. The base after the stream studies were completed, was proposed for reactivation and considerable progress was made in constructing the required facilities; however, construction has been stopped by the U. S. Navy and a search is now underway for a new use for it. Facilities were planned for a complement of 2,500 men. Domestic water will continue to be available from wells, but a new sewage treatment plant was completed prior to the cessation of the construction activities. The plant is of the primary-type and consists of a bar-rack, a clarifier-type settling basin, a digester, sludge drying beds, and provisions for chlorinating the effluent. All construction huts were served by septic tanks with nitrification lines, except one building housing 15 people that discharged its untreated domestic sewage to Perquimans River. If the effluent from the base sewage treatment plant is chlorinated and the plant is properly operated, it should be adequate for the treatment of sewage from the number of persons for which it was designed.

The disposal of sewage from the former U. S. Navy Auxiliary Air Station on Albemarle Sound near the Town of Edenton has been mentioned briefly under the General Statement at the beginning of this section of the report entitled "General Survey Findings". While this Station has been deactivated, the following information is given to more fully describe the conditions existing at the time of the stream studies:

U. S. Navy Auxiliary Air Station, Edenton - In the summer of 1957 when the stream studies were being made, this base was manned by 1,200 Marine personnel. The domestic sewage was collected in a separate type collection system and treated in a primary type treatment plant, consisting of a bar screen, comminutor, Imhoff tank, sludge drying beds, and a chlorine contact chamber. The outfall extended approximately 50 feet into Albemarle Sound where it discharged beneath the surface. The treatment plant appeared to have been well-operated. The Sound water was well saturated with dissolved oxygen, while the average coliform bacteria content of samples of water taken at three points around the outfall at Sampling Station 62 ranged from 9.1 to 430 (MPN) per 100 ml.

Soon after the studies were completed, the base was de-activated and all facilities abandoned; however, the Town of Edenton has negotiated with the Navy Department and has now secured land on the Air Station's property to build a municipal sewage treatment plant from which the effluent will be discharged into Edenton Bay.

SECTION III. KENDRICK CREEK

Kendrick Creek is presently used only for the disposal of waste; however, there is farming in the area in the vicinity of Roper and a classification is being proposed to protect the creek for purposes of irrigation. The sources of pollution are described as follow:

Roper High School, with an enrollment of 326, is located in the Town of Roper which lies on Kendrick Creek, a typical swamp water stream characteristic of the Basin. The untreated sewage from the school and lunchroom is discharged to Kendrick Creek together with the untreated sewage from 10 known

private outfalls from the Town. These discharges create unsightly and insanitary conditions in the Creek in the vicinity of the school property and the Town. The discharges increased the BOD of the Creek water, while coliform bacteria were found in numbers as high as 43,000 (MPN) per 100 ml.

The Board of Education of Washington County should plan to construct adequate sewage treatment facilities for the school and, in addition, those responsible for the discharge of untreated sewage through private outfalls should take corrective action. In this connection, the Town of Roper, with a 1950 population of 793, should consider the possible need for a sewage collection system and treatment facilities.

J. T. Griffin Fish House, Mackeys, is located on a small canal tributary to Kendrick Creek 0.8 of a mile from its mouth and a short distance upstream from Walaka Fish Products Company, which will be described below. During the fishing season, herring are caught and unloaded at the plant where they are cleaned and the roe removed. The fish are salted and packed, while the roe is sold to a plant at another location for processing and canning. Waste products and fish offal are carried to Kendrick Creek and dumped upstream from the plant. This practice not only causes a nuisance condition in the stream, but could be detrimental to the fish life in Kendrick Creek under low-water conditions. The owner of this plant should examine the possibility of selling fish scraps, heads, and offal to a meal processing plant. Consideration also should be given to the screening of the wash water which could be accomplished at little expense. At peak season, the plant employs only 4 workers. There are no toilet facilities at the plant; however, a privy or other means of sewage disposal should be provided in the interest of good sanitation.

Walaka Fish Products Company - Mackeys - During 1957, the year that the study of this Basin was made, this plant and a smaller one now closed, processed and canned in excess of 1,000,000 pounds of herring and herring roe per year. Within the last two to three years, the diminishing market for this type of fish has caused production to be reduced considerably. A smaller number of herring are still processed here but the roe is removed and sent to another place to be canned. Rock fish (stripped bass) are caught, iced and shipped; only occasionally is one of these dressed by special request. The cutting table is located over Kendrick Creek and as a result of this operation, wash-down, and unloading of the fish, blood, fish offal, and rejected fish can be seen floating in the water near the dock and as far downstream as the railroad tressel near the mouth. An attempt should be made to recover all waste products which are disposed of by collection in a holding box and sent to a meal processing plant. Water for wash-down is pumped from Kendrick Creek and should, as far as possible, be diverted through a screen before discharging back to the Creek. The plant has an average of 8 employees in peak season. Domestic sewage is disposed of by privies located on shore.

The above referred to seafood processing plants were not in operation at the time of the 1957 stream sampling program and the analyses do not reflect the above adverse conditions found during the commercial fishing season. Suffice to say that the analyses at that time showed that there was good recovery from the pollution originating in the Town of Roper, except on one occasion when large quantities of swamp water were in evidence.

SECTION IV. SCUPPERNONG RIVER

Scuppernong River, a typical swamp water stream such as is found in this Basin, is used for sport fishing in the reach extending from above the Town of Creswell to First Creek (Rider Creek), while below this point the river is designated as commercial fishing waters. Lake Phelps, in the Pettigrew State Park, is used for sport fishing, boating, and water skiing. Excellent farm lands have been reclaimed from the low-lying lands north of the lake. While there is no record that water for irrigation is being taken from the streams in this area, classifications are being proposed to protect such a use. The Town of Columbia, with a connected population of about 700, discharges untreated sewage into the river commercial fishing waters, while partially treated sewage is discharged from the Creswell High School into a canal leading to the river. Untreated sewage from the fish processing plant operated by R. K. Jagars is discharged into river at Columbia. At the time of the stream studies, fish scraps, offal, etc., from this plant were being dumped into the upstream marshes and in part into the river, but this practice has been stopped. The sources of pollution are described in more detail as follows:

Creswell High School, with an enrollment of 490, is located in the Town of Creswell on a canal tributary to Scuppernong River. The school is provided with a septic tank and nitrification field which, from the analyses of water taken from the canal, was discharging partially treated sewage thereto at the time of the stream studies. This discharge created odors and unsightly conditions in the canal. Since this canal flows under the school building, provisions should be made to properly treat the waste from the school at a location where a public health hazard will not exist. The Board of Education of Washington County should take immediate steps to provide the required treatment.

The analyses of samples of water collected from the canal, above the school at U. S. Highway 64, Sampling Station 67A, and at a point just upstream from the school, Sampling Station 68, showed that this canal was receiving pollution from unknown sources. The Town of Creswell, with a 1950 population of 425, should consider the possible need for a sewage collection system and treatment facilities.

The Town of Columbia has a separate-type domestic sewage collection system serving a population of 700. The sewage is discharged untreated into Scuppernong River via one municipal outfall. In addition to this, there are five stores and seven residences located on the river front that discharge untreated sewage directly to the stream, making a total domestic sewage P.E. of approximately 728 being discharged to the river. The pumping station which discharges all the sewage to the outfall line has only one pump and during times of maintenance and repair the sewage is discharged to a canal near part of the residential section of Town. The water in this canal contained an average coliform bacteria content of 12,000 (MPN) per 100 ml. with a high of 24,000 at Sampling Station 72, which indicated the Station was either being by-passed during the study or the canal was receiving waste from other sources. The right side of the river below the outfall contained a slight scum and occasional floating solids were observed near the shore. The coliform density was fairly well distributed across the river with an average of 3,400 (MPN) per 100 ml. just downstream from the outfall at Sampling Station 73. This distribution of sewage over the river could be attributed either to the force of the discharge from the pump or to the wind action on the river's surface

In order to remove this nuisance created by the discharge of untreated domestic sewage into the river, the Town of Columbia should inaugurate plans for the construction of suitable and adequate treatment facilities. The Town and their engineers should plan to construct adequate lines to collect all wastes not now discharged into the Town system.

R. K. Jagars, Columbia, is a dealer in fresh and saltwater fish. In season, the plant also processes, packs, and freezes shrimp for wholesale purposes. The building housing the operation is built over Scuppernong River within the Town of Columbia. The processing of the fish includes beheading, scaling, and cleaning the fish before packing and beheading of the shrimp. During the period of the stream study, the solid wastes from these processes were carried upstream where they were dumped onto a marsh and occasionally a box was dumped in transit, thereby creating a nuisance along the shore. As a result of complaints made to this office and to the local Health Department, an investigation was made by the staff of the Division of Stream Sanitation and Hydrology. Since this investigation, the fish and shrimp offal is being ground and used locally as hog feed. One overboard toilet serves the average of 12 employees. The domestic sewage could be removed by a connection to the Town of Columbia's collection system, while good housekeeping and continued removal of all waste fish and offal for agricultural purposes would prevent any possibility of the former nuisance.

The water of Albemarle Sound is used for bathing on both sides of the mouth of Scuppernong River. The discharge of the above wastes at the time of the stream studies did not affect the bathing areas in the Sound; however, should the Town of Columbia grow and the above objectionable conditions continue to prevail, these bathing areas will undoubtedly be adversely affected by the wastes from the Columbia area.

SECTION V. CROATAN SOUND AND TRIBUTARIES

The waters of Croatan Sound are used extensively for both sport and commercial fishing and below the William B. Umstead Memorial Bridge they are well adapted to the culture of shellfish. A bathing area is maintained in the Sound at Roanoke Island Camps, Inc. which are located at the site of an old Army airfield on Roanoke Island. These camps, which were inadvertently omitted from the section-devoted to Parks and Recreation, are maintained in behalf of the Dare County 4-H Club and have facilities for 225 campers, excluding those proposed for a Boy Scout Day Camp. Domestic water is derived from a well, while sewage is discharged to the old Imhoff tank and a newer nitrification field. The waters of the Sound are free of pollution, except that in a canal at Manns Harbor, and are of excellent quality for the uses made of them, including bathing. The only source of pollution of note is the small canal located at the old ferry slip which is described as follows:

Canal Adjacent to Ferry Slip - Manns Harbor - This canal receives untreated sewage from overboard toilets located near the old ferry slip, as well as from boats using the canal for business and other purposes. The houses in the Community of Manns Harbor, with a 1950 population of 280, are located in large measure along U. S. Highways 64 and 264 a considerable distance from the Sound and appear to present no particular sewage disposal problem at this time; however, there are a few houses in the general area of the canal and sewage may be reaching the canal from them. In any event, the water of the canal near its mouth contained coliform bacteria at the time of the study in numbers as high as 4,300 (MPN) per 100 ml., greatly in excess of the numbers permitted in water from which shellfish are harvested for

human consumption. The disposal of sewage by means of overboard toilets should be prevented and any harvesting of shellfish from this canal or the Sound near its mouth also should be prevented as noted previously in this report.

SECTION VI. ROANOKE SOUND AND TRIBUTARIES

The waters of Roanoke Sound above and below a line running from Ballast Point through the northern tip of Nags Head Island to a point on Bodie Island are used for both sport and commercial fishing, while south of this line they are used for the culture of shellfish. There is no organized bathing in these waters, except individuals use the polluted waters of Shallowbag Bay for water skiing and occasionally for bathing. The waters of the Sound and its tributaries are free from pollution and are of excellent quality for the uses made of them except as described below:

National Historic Site - This site is the location of the historically famous "Lost Colony" where the drama of the same name is given at the Seaside Theater. Sewage is discharged to the Sound at the rear of the theater from public toilets and the dressing rooms via two sewers. While samples from the Sound did not show excessive pollution, when collected in the daytime when few people were present, good sanitation practice requires that sewage from an installation to which large numbers of visitors are invited should be effectively treated, preferably, in this case, by disposal in the ground. The present practice does not affect the commercial fishing waters.

The Town of Manteo has a separate type sewage collection system that serves a population of 1,180 and contains no industrial waste. The sewage is discharged untreated into Shallowbag Bay via an outfall extending 640 feet into the Bay and 6.5 feet below the surface. In addition to this one municipal outfall, numerous private lines from business establishments, located along the Bay and Doughs Creek, are discharging untreated wastes into these waters. A very detailed study of the Bay was made by sampling at 22 grid points located throughout the Bay and Doughs Creek. The water in the Bay contained coliform bacteria in numbers ranging from <3.6 (MPN) per 100 ml. at the mouth of the Bay to a high of 110,000 near the end of the outfall. All samples taken in the vicinity of the outfall had a high coliform bacteria content, while those taken in the mouth where the sewage was diluted by the vast amount of water from Roanoke Sound contained but few such bacteria for the most part. The dissolved oxygen assets of the Bay waters were not materially affected by the discharge of the sewage thereto. However, as noted previously in the report, the deposits of sludge on the bottom of the Bay do influence the type of fish which will reside in waters receiving this type of waste.

The very nature of this Bay, which is an esturary of Roanoke Sound and generally calm, makes it an excellent location for water-type recreation; such as bathing, fishing, and water skiing. In this connection the State Stream Sanitation Committee is proposing a classification of "SC-Swp." for these waters which is designed to protect the waters for fishing. Accordingly, they would not be protected for either bathing or water skiing. There can be no doubt as to the necessity of treating the sewage from the Town, which attracts so many tourists to enjoy its hospitality, but the type of treatment required and the location of the plant site will be influenced by the final classification adopted by the Committee. In this regard, the Committee at the public hearing will give careful consideration to the desires of the inhabitants of the Town as to the use of these presently polluted waters. The Town and their engineers should begin now to study these matters and include

in their planning the collection of all untreated wastes now reaching the Bay and the practicability of removing the wastes to a point for treatment where the effluent can be discharged into waters other than those in Shallowbag Bay. In the meantime, the use of these polluted waters for bathing and water skiing by individuals should be prevented.

Pond Island Area - As mentioned previously in the report under Shellfishing Waters, the waters in the immediate vicinity of Pond Island are subject to pollution from boats with overboard toilets and from the small population residing on the island. There is also the possibility of sewage and waste being discharged from one or more restaurants. Samples collected from the canal, located at the west end of the island and north of the highway, showed that the water had a BOD as high as 4.5 ppm and contained coliform bacteria in numbers as high as 150 (MPN) per 100 ml. which exceed the limit normally considered safe for shellfishing waters. It was concluded from these studies that shellfish for human consumption should not be taken from the waters in the immediate area of the island. Nevertheless, every effort possible should be made to remove all sewage which may be reaching these waters from land establishments.

Mill Creek at Wanchese - The Community of Wanchese, with a 1950 population of 641, does not have a unified sewage collection system and each property depends upon local means of sewage disposal. Mill Creek, which receives drainage from part of the Town, shows evidence of pollution. In this connection the effluent from a septic tank at a seafood processing plant enters the Creek without further treatment and fishing boats with overboard toilets also pollute the water. Samples collected from the Creek in 1957 contained coliform bacteria in numbers as high as 750 (MPN) per 100 ml. It was for these reasons that it was recommended earlier in the report that the taking of shellfish for human consumption from the Creek waters should be prevented. Every effort should be made to prevent the discharge of improperly treated sewage to the Creek from establishments on its shores. In this connection, should the Town experience a pronounced growth it should consider the possible need for a sewage collection system and treatment facilities.

SECTION VII. PAMLICO SOUND AND TRIBUTARIES

The waters of Pamlico Sound within the Pasquotank River Basin lie north of a line extending from Sandy Point to the northeast tip of Ocracoke Island. The Sound is used for both sport and commercial fishing and for shellfishing. In fact, the Sound includes some of the best shellfishing waters of the State. The Sound waters are free from pollution, except in the case of Stumpy Point Bay, and are otherwise of excellent quality for the uses made of them. The pollution in Stumpy Point Bay and the sewage treatment facilities at the U.S. Navy Communication Facility at Buxton, are described as follows:

Stumpy Point Navy Target Station - Stumpy Point - The Target Station, located on the west side of Stumpy Point Bay in the Lake Worth area, has a complement of only 14 men. Drinking water is obtained from a well. Sewage, at the time of the stream studies, was being discharged into a 4,000-gallon septic tank provided with nitrification lines which did not function properly because of the high water table. As a consequence, partially treated sewage was reaching the Bay which is a well known and very prolific growing shellfish growing area. In 1958, a "Certificate of Approval" was issued to the Department of the Navy for the septic tank and improvements consisting of a chlorinator, a chlorine contact tank, and an effluent outfall to a canal tributary to the Bay. It is believed that with sound operation of these facilities at all times, they should prove satisfactory.

The Community of Stumpy Point, located on Stumpy Bay, had a 1950 population of 300. It does not have a unified sewage collection system and each property is supplied with a septic tank and subsurface disposal system which may not always function properly because of the high water table. In addition, two seafood processing plants have overboard toilets discharging to the Bay. Most of the houses are located on elevated land around the north and east perimeter of the Bay which is drained by a system of canals with outlets to the Bay.

Samples of water collected at the mouth of Stumpy Point Bay at the time of the stream studies reflect the conditions existing at that time. The analyses showed that the water was well saturated with dissolved oxygen but contained coliform bacteria in numbers as high as 930 (MPN) per 100 ml., well above the limits for satisfactory shellfishing waters. As noted previously in the report, the State Board of Health, in recognition of the conditions existing in the area of the Bay, is conducting a thorough study of the waters therein in the summer of 1960, with the idea of recommending the closing of the waters for the taking of shellfish for human consumption if their study shows that they cannot meet the Public Health Standards. In view of the conditions found at the time of the stream studies, the Community of Stumpy Point should consider the need for installing a sewage collection system and treatment facilities.

U. S. Naval Communication Facility - Buxton - This base, which is located near the Cape on Hatteras Island, had a sewage system that served 132 officers and men at the time of the stream studies, although this number was increased to a complement of 213 shortly thereafter. The sewage was treated by a system consisting of a septic tank provided with nitrification lines. These lines became waterlogged and fouled with grease and as a result, the effluent flowed to the surface of the sandy ground. The base more recently has been enlarged to a point where the sewage system presently serves approximately 250 people, including those in the 27 - unit Capehart Housing Project.

Since the enlargement of the base, a second septic tank has been added, which is approximately the same capacity as the original unit (13,000 gallons), together with a sand filter. The effluent from the filter flows to a ditch about 300 feet long, between two sand dunes, and then seeps into the sand only a short distance from the outfall. When the treatment facilities were last examined, trouble was being experienced with grease from an electric disposal unit, which was not equipped with a grease trap. The grease was tending to clog the filter; however, steps were being taken to correct this unsatisfactory condition. It is believed that with proper maintenance and operation, these treatment facilities should be adequate for the present needs of the base.

In view of the changes which have taken place in regard to the number of commercial seafood establishments in the Basin since the time of the stream studies, the following information is presented for record:

Commercial Seafood Establishments

As previously mentioned in this report, there were twenty commercial seafood establishments located in the basin during the time of the stream studies. Many of these plants have ceased operations since that time, because the market for these products is highly competitive and unstable; nevertheless, a number of new establishments have been located in the basin since the studies were made. Those which have ceased operations are listed as follows:

Firm & Location	Stream Site	Product
Charlie Snowden, Currituck	Currituck Sound	Fresh Fish
F. L. Peele & Son, Hatteras	Pamlico Sound	Fresh Fish
M. J. Spruill, Mackeys	Kendrick Creek	Fresh Fish & Corned Herring
Coastal Fish Co., Manns Harbor	Canal to Croatan Sound	Fresh Fish
Tillet & Card, Manns Harbor	Canal to Croatan Sound	Fresh Fish
Norman Gregory, Poplar Branch	Currituck Sound	Fresh Fish
F. L. Hooper, Stumpy Point	Stumpy Point Bay	Fresh Fish
Meekins & Hooper, Stumpy Point	Stumpy Point Bay	Fresh Fish
George M. Wise, Stumpy Point	Stumpy Point Bay	Fresh Fish
W. E. Etheridge Fish Co., Wanchese	Mill Creek to Roanoke Sound	Fresh Fish & Shrimp

There are 11 commercial seafood establishments still operating within the basin that presently are not considered a significant point of pollution. These are listed below:

Firm & Location	Stream Site	Product
Duvall Fish & Crab Co., Mans Harbor * (1)	Canal to Croatan Sound	Fresh Fish & Crabs
A. B. Hooper, Manns Harbor *	Canal to Croatan Sound	Fresh Fish
Donald Oden, Hatteras * (1)	Pamlico Sound	Fresh Fish
Jethro Midgette, Nags Head	Atlantic Ocean	Fresh Fish
C. P. Nunemaker Fish Co., Collington	Kitty Hawk Bay	Fresh Fish
Daniels Crab House, Manteo (1)	Canal to Roanoke Sound	Crab Meat
Alton Best Fish Co., Stumpy Point *	Stumpy Point Bay	Fresh Fish, Shellfish & Shrimp
Fishermans Exchange, Stumpy Point * (1)	Stumpy Point Bay	Fresh Fish, Shellfish & Shrimp
Croatan Crab Plant, Wanchese	Mill Creek to Roanoke Sound	Crab Meat
Chief Wanchese Packing Company, Wanchese	Mill Creek to Roanoke Sound	Crab Meat
Wanchese Fish Co., Wanchese	Mill Creek to Roanoke Sound	Fresh Fish

(1) Plant established after stream studies were made.
* Domestic sewage disposed of by overboard toilets.

Investigations have shown that those establishments dealing in fresh fish only merely remove the fish from boats to the fish house where they are packed in boxes, iced, and shipped to retailers by truck. This process produces little pollution other than scales and rejected fish that are washed overboard from the fish houses or boats. Generally, this has proved to be insufficient pollution to cause a nuisance condition.

The only waste produced by the crab meat plants is a small amount of offal and what meat is left in the shells after picking. This is generally hauled to deep water where it is dumped overboard. Crab meat is good fish food and is usually cleaned up by the fish soon after it is dumped; however, in the case of a strong wind or tide, it is possible that some of this waste may wash ashore where it would putrify and cause a nuisance, although no

reports of this have been received by this office. Wherever possible the crab plant operators should make arrangements with dehydrating or rendering plants to process these wastes in order to avoid the possibility of future complaints.

It should be noted from the previous table that five of these establishments use overboard toilets to dispose of domestic sewage. Every effort should be made to remove this waste from the stream by underground or other accepted means.

There are four commercial seafood establishments within the area that process the various types of fish brought to their establishments. These processes produce a waste that has been found to be a definite source of pollution. These establishments, which have been discussed in detail in previous sections of this report, are listed below:

Firm & Location	Stream Site	Product
R. K. Jagars, Columbia	Scuppernong River	Fresh & Processed Fish & Shrimp
Globe Fish Co., Elizabeth City	Pasquotank River	Fresh & Processed Fish
Walaka Fish Products Co., Mackeys	Kendrick Creek	Fresh Fish & Corned Herring
J. T. Griffin Fish House, Mackeys	Kendrick Creek	Fresh Fish & Corned Herring

Summary Discussion Of Pollution In The Pasquotank River Basin

The major portion of the waters of the Pasquotank River Basin are free from pollution due to the activities of man. The major tributaries of Albemarle Sound below the headwaters are in effect arms or estuaries of the Sound for the most part. Generally speaking the centers of population contributing the most pollution to the waters of the Basin lie at the point where the rivers begin to broaden and afford opportunities for the wastes discharged therefrom to be diluted, although this process is largely dependent upon favorable wind action. As noted previously in the report, the headwaters, although free from man-made pollution, are usually low in dissolved oxygen and as they reach the broad reaches of the rivers the dissolved oxygen content of the water increases through diffusion, wind action, and photosynthesis to some extent. The effect of pollution due to sewage and industrial waste upon the dissolved oxygen assets of the streams is to delay the recovery of the oxygen deficient waters, except in small tributaries where the dissolved oxygen is reduced to zero. The best parameters of pollution in these waters are those of sensory observations, that is to say those of sight and smell, and the increase in the numbers of coliform bacteria.

Albemarle Sound, Currituck Sound, North River, Big Flatty Creek, Little River, Yeopim River, Alligator River, and the Atlantic Ocean adjacent to "The Outer Banks", are presently free from man-made pollution of any significance. Of the remaining waters, only the Pasquotank, Perquimans, and Scuppernong Rivers and Shallowbag Bay receive pollution of magnitude, although there are a few instances where minor pollution causes local nuisances or

pollution to waters in shellfishing areas. The pollution from the major sources, found at the time of the stream studies had an estimated volume of 1.870 MGD and an estimated population equivalent (P.E.) of 25,157 before treatment and a P.E. of 24,099 after treatment, which represents but a 4% reduction in the pollution reaching the streams. Since that time, the pollution reaching the streams is somewhat less due to reduced military activity.

The Pasquotank River has the greatest concentration of population and industrial activity than any other river in the Basin and as a result, its pollution load is the heaviest. The wastes discharged to the river and its tributaries had an estimated volume of 1.5 MGD at the time of the stream studies and an estimated P.E. of 19,927 before treatment and a P.E. of 19,507 after treatment, which represents a reduction in pollution of but 2%. The untreated wastes discharged from Elizabeth City had an estimated P.E. of 18,063. These untreated wastes caused very unsightly conditions, created foul odors and health hazards, and were a constant threat to the safety of downstream bathing waters. Untreated sewage was discharged to the river from the U. S. Coast Guard Air Station and the U. S. Coast Guard Repair and Supply Base, with a combined population of 600, through one outfall, while toxic materials were discharged to the river through a second outfall from the latter installation. The sewage from these installations also is a constant threat to the bathing areas in the river, especially those nearest to the bases. New Begun Creek receives partially treated sewage from the Weeksville High School, which largely creates local nuisance conditions, and primary treated sewage from the Navy Air Facility at Weeksville via Pailin Creek. The Air Facility is presently on a standby basis and has a much smaller population than found at the time of the stream studies when the population was 1,200. At that time, New Begun Creek showed little effect from the effluent from the Air Facility treatment plant.

Perquimans River and certain of its tributaries in the Town of Hertford receive untreated sewage from an estimated population of 2,100 in the Town and, during the school year, the untreated sewage from the King Street School and the Perquimans County High School with a combined enrollment of 968. The combined effect of these wastes causes unsightly conditions, offensive odors, and a considerable rise in the coliform bacteria content of the receiving waters, which poses a constant threat to the safety of downstream bathing areas in the river. The foul conditions in Gum Pond Run and Jennies Gut create a health hazard in the vicinity of the High School. As mentioned previously in the report, there is a new primary sewage treatment plant at the former Harvey Point Seaplane Base which has never been used. While this is so, every effort possible is being made to secure a use for the site as it has a number of tangible assets.

The Edenton Navy Auxiliary Air Station on Albemarle Sound has been deactivated since the time of the stream studies. The sewage at that time from the complement of 1,200 men was treated in a primary treatment plant with the effluent being discharged to the Sound. The analyses showed that the treated sewage had no appreciable deleterious effect upon the receiving waters.

The waters of Kendrick Creek receive untreated sewage from the Roper High School and 10 known private outfalls in the Town. These discharges increase the BOD of the Creek water and cause a significant increase in the numbers of coliform bacteria found therein; however, there was good

recovery from these adverse effects at the Sampling Station above Mackeys. Kendrick Creek just above Mackeys receives waste products and offal from the J. T. Griffin Fish House which are dumped therein, while at Mackeys similar materials enter the Creek from the Walaka Fish Products Company, although an effort is made to recover most of the solid waste. The wastes from these fish houses cause unsightly conditions and otherwise affect the stream.

Scuppernong River receives pollution from three known sources. Partially treated sewage is discharged from the Creswell High School which reaches the river via a canal, while there is evidence from the analyses of samples taken from the canal above the school that pollution is coming from other unknown sources in the Town of Creswell. These adverse conditions create a health hazard in the vicinity of the school. The Town of Columbia, with a connected population of 700, discharges untreated sewage to Scuppernong River, while the untreated sewage from some 28 people is discharged therein through several private outfalls. At the time of the stream studies, the waste products from the commercial seafood processing plant of R. K. Jagars at Columbia were dumped on marshes upstream from the Town and partly into the river. A number of complaints were received regarding this insanitary practice and as a result, the solid waste is now recovered and used as food for hogs; however, the sewage from the employees continues to be discharged into the river without treatment. The untreated sewage presently being discharged from the Town and private outfalls causes unsightly conditions, sludge deposits, offensive odors, and a considerable increase in the numbers of coliform bacteria found in the river water. Should the Town gain appreciable in population, the safety of the bathing waters in Albemarle Sound at the mouth of the river will be threatened.

The waters of Croatan Sound are of excellent quality for the uses made of them, except for the water in the canal adjacent to the old ferry slip at Manns Harbor. The canal receives untreated sewage from toilets at the slip and from boats and possibly from other sources. The taking of shellfish from this water should be prevented.

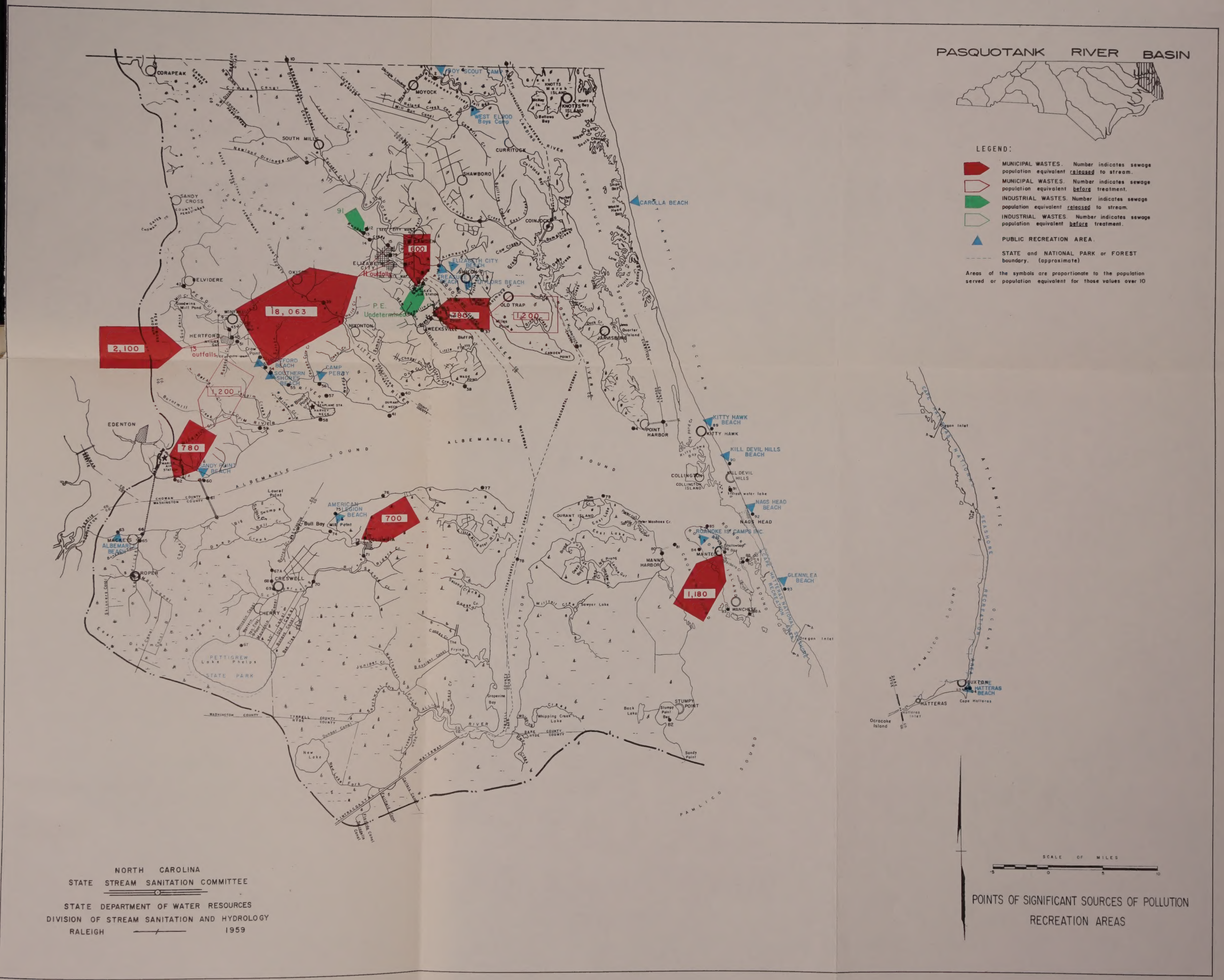
Roanoke Sound and its tributaries are free from man-made pollution, except in four instances. The Sound receives untreated sewage from the Seaside Theater at the National Historic Site (Fort Raleigh) during the summer months. While the Sound waters do not appear to be seriously affected by this sewage, such a method of sewage disposal is insanitary and undesirable, especially where large numbers of people are invited to enjoy an historic site and its accompanying drama. The Town of Manteo is discharging untreated sewage into Shallowbag Bay from an estimated population of 1,180. In addition, untreated sewage is discharged therein from an unknown number of people by means of private outfalls. These discharges create unsightly conditions and sludge deposits, while large numbers of coliform bacteria are found in the waters nearest to the Town. In short, the conditions are such as to create a health hazard, especially to those using these waters for unorganized bathing and water skiing. The waters in the immediate vicinity of Pond Island are polluted by sewage from boats, and possibly by waste from restaurants, and the canal at the west end of the Island contained coliform bacteria in such numbers as to exceed the limits normally considered satisfactory for shellfishing waters. The water of Mill Creek receives drainage from the Community of Wanchese, partially treated sewage from a commercial seafood establishment, and sewage from boats. These waters also contained coliform bacteria in numbers exceeding the limits normally acceptable for shellfishing waters. In each case, it is inadvisable to take shell-

fish for human consumption from the waters as described.

The waters of Pamlico Sound and its tributaries are of excellent quality for the uses made of them, except possibly in the case of Stumpy Point Bay. This Bay receives treated sewage from the Stumpy Point Navy Target Station, untreated sewage from two commercial seafood establishments, and quite possibly partially treated sewage from the houses in Stumpy Point. As a result of these conditions, the State Board of Health is making a study of the Bay waters in the summer of 1960 with the idea of closing these waters for the taking of shellfish for human consumption if they do not meet the Public Health Standards.

Table 6 of the report lists three Prison Camps in the Basin. While primary treatment only is given to the sewage from these camps, except in one instance where lagoons receive the effluent, it is believed that the receiving waters are adequately protected by the existing treatment facilities for the present.

It becomes obvious from perusal of this report, that if the full potential of the surface waters of this Basin is to be realized corrective action must be taken by those responsible for existing pollution. In this connection, several communities in the Basin are without unified sewage collection systems and treatment facilities and are potentially sources of pollution. The Towns of Roper and Creswell are each located on small streams which are already polluted to various degrees. The Community of Wanchese is located on sandy soil and concentrated in a fairly small area. While the various property owners as a whole do not appear to have a particular problem with disposal of sewage in the ground, trouble may be experienced in the future should the Town experience a large increase in population. In each of these cases it may not be too early for the people to consider unified sewage collection systems and treatment facilities. The area which has the greatest need for a collection system and treatment plant at the present time is the Nags Head-Kill Devil Hills-Kitty Hawk Sanitary District. This District was formed in 1950, principally to build a central water system which, as yet, has never been built. This District has grown, not only as a summer resort area, but has become a permanent home for many people. Most of the lots within this area are small and have individual septic tanks with nitrification lines, and shallow wells for domestic water. The high-water table in this area, together with the ever-present possibility of the ground becoming saturated with sewage, raises the possibility of contamination of the bathing areas, as well as the ground water supplies. This District should make definite plans to protect the future of these beaches, around which the life and future of the communities are dependent. The construction of bridges over Alligator River and Oregon Inlet will add greatly to the future growth of these communities as well as to that of all "The Outer Banks" Communities.


PASQUOTANK RIVER BASIN
LEGEND:
MUNICIPAL WASTES. Number indicates sewage population equivalent released to stream.
MUNICIPAL WASTES. Number indicates sewage population equivalent before treatment.
INDUSTRIAL WASTES. Number indicates sewage population equivalent released to stream.
INDUSTRIAL WASTES. Number indicates sewage population equivalent before treatment.
PUBLIC RECREATION AREA.
STATE and NATIONAL PARK or FOREST boundary. (approximate)
Areas of the symbols are proportionate to the population served or population equivalent for those values over 10
2,100
18,063
600
780
1,200
700
1,180
11 outfalls
13 outfalls
P.E. Undetermined
CORAPEAK
MOYOCK
SOUTH MILLS
SHAWBORO
CURRITUCK
COINJOCK
SANDY CROSS
ELIZABETH CITY
ELIZABETH CITY BEACH
TREASURE BEACH
CAYLORS BEACH
OLD TRAP
WEEKSVILLE
NIXONTON
HERTFORD
EDENTON
SANDY POINT BEACH
AMERICAN LEGION BEACH
ALBEMARLE BEACH
ROPER
CRESWELL
CHERRY
PETTIGREW STATE PARK
CAROLLA BEACH
JARVISBURG
POINT HARBOR
KITTY HAWK BEACH
KITTY HAWK
KILL DEVIL HILLS BEACH
KILL DEVIL HILLS
COLLINGTON
NAGS HEAD BEACH
NAGS HEAD
ROANOKE IS. CAMPS INC.
MANTEO
MANNS HARBOR
WANCHESE
GLENNLEA BEACH
STUMPY POINT
HATTERAS
BUXTON
HATTERAS BEACH
ALBEMARLE SOUND
PAMLICO SOUND
ATLANTIC OCEAN
SCALE OF MILES
NORTH CAROLINA
STATE STREAM SANITATION COMMITTEE
STATE DEPARTMENT OF WATER RESOURCES
DIVISION OF STREAM SANITATION AND HYDROLOGY
RALEIGH 1959
POINTS OF SIGNIFICANT SOURCES OF POLLUTION
RECREATION AREAS

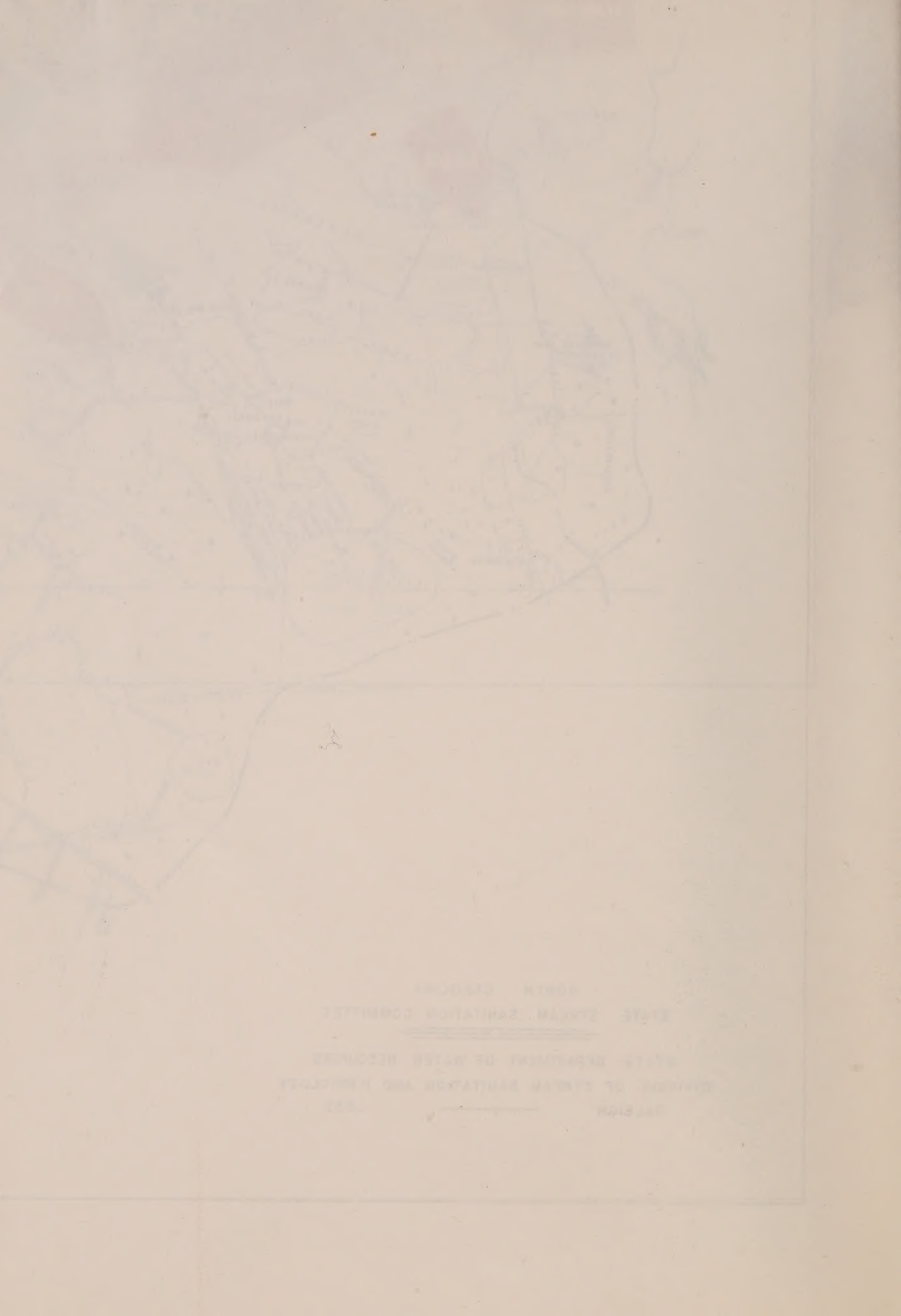


TABLE 1

SAMPLING POINTS AND GAGING STATIONS

PASQUOTANK RIVER BASIN

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
	Currituck Sound at Mouth of North Landing R.	-	30.1*	-
1	North Landing River near Munden, Va.	R.P.#	12.6*	-
	North Landing River at Mouth of Northwest River	-	3.7*	-
2	Northwest River near Moyock, N.C.	-	10.2a	-
3	Currituck Sound at Point Harbor, N.C.	R.P.#	0	-
	Currituck Sound at Mouth (Wright Memorial Bridge)	-	0	-
4	Albemarle Sound at Point Harbor, N.C.	-	-	-
	North River at Mouth of Indiantown Creek	-	21.3*	-
5	Indiantown Creek near Belcross, N.C.	R.P.#	2.4a	-
	North River at Mouth of Intercoastal Waterway	-	13.6*	-
6	Intracoastal Waterway near Coinjock, N.C.	-	2.9a	-
7	Intracoastal Waterway at Coinjock, N.C.	O.S.#	2.5a	-
8	North River near Jarvisburg, N.C.	-	2.8*	-
	North River at Mouth (A straight line from Camden Point through F1R4 Sec. "46" Buoy and C-47 Buoy to opposite shore.)	-	0	-
9	Pasquotank River near South Mills, N.C.	R.P.	36.9*	64
	Pasquotank River at Mouth of Dismal Swamp Canal	-	35.0*	-
10	Dismal Swamp Canal at N.C.-Va. State Line near South Mills, N.C.	-	12.0a	-
11	Pasquotank River near Elizabeth City, N.C.	R.P.#	19.9*	280
	Pasquotank River at Mouth of Knobbs Creek at Elizabeth City, N.C.	-	17.3*	-
	Knobbs Creek at Mouth of Unnamed Tributary	-	4.3a	-
12	Unnamed Tributary to Knobbs Creek above Brothers Abattoir near Elizabeth City, N.C.	-	0.6a	-
13	Unnamed Tributary to Knobbs Creek below Brothers Abattoir near Elizabeth City, N.C.	-	0.5a	-
14	Knobbs Creek near Elizabeth City, N.C.	R.P.#	4.1a	-
15	Knobbs Creek at U.S. Hwy. #17 and 158 at Elizabeth City, N.C.	-	1.7a	-
16	Knobbs Creek at Elizabeth City, N.C.	R.P.#	0.1a	-
	Pasquotank River at Mouth of Unnamed Ditch at Pondexter Street	-	17.0*	-
17	Unnamed Ditch to Pasquotank River at Glade Street at Elizabeth City, N. C.	-	0.5a	-
18	Unnamed Ditch to Pasquotank River at Poindexter Street at Elizabeth City, N.C.	-	0.1a	-
19	Pasquotank River at U.S. Hwy. #158 Bridge at Elizabeth City, N.C.	R.P.#	16.9*	300
20	Pasquotank River at Elizabeth City, N.C.	-	16.6*	300
	Pasquotank River at Mouth of ditch at McMorin Street at Elizabeth City, N.C.	-	16.6*	-
21	Ditch at McMorin Street at Elizabeth City, N.C.	-	0.2a	-

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
	Pasquotank River at Mouth of Charles Cr.	-	16.5*	-
22	Charles Creek at Harrington Road at Elizabeth City, N.C.	-	0.7a	2.9
	Charles Creek at Mouth of Unnamed Tributary	-	0.5a	-
	Mouth of ditch to Unnamed Tributary to Charles Creek	-	0.1a	-
23	Ditch to Unnamed Tributary off Euclid Avenue at Elizabeth City, N.C.	-	0.1a	-
24	Charles Creek at Southern Avenue at Elizabeth City, N.C.	R.P.#	0.4a	3.0
25	Charles Creek at Mouth at Elizabeth City, N.C.	-	.0a	.09
26	Pasquotank River adjacent to Riverside Drive at Elizabeth City, N.C.	-	16.1*	-
27	Pasquotank River at Cobb Point near Elizabeth City, N.C.	-	14.5*	320
28	Pasquotank River above U.S. Coast Guard Station near Elizabeth City, N.C.	-	12.0*	340
29	Pasquotank River at U.S. Coast Guard Station near Elizabeth City, N.C.	-	13.0*	340
30	Pasquotank River at U.S. Coast Guard Repair Station near Elizabeth City, N.C.	-	12.6*	340
31	Pasquotank River at Treasure Point Beach near Elizabeth City, N.C.	-	11.6*	-
32	Pasquotank River at Elizabeth City Beach near Shiloh, N.C.	-	10.0*	-
33	Pasquotank River at U.S. Naval Air Facility near Weeksville, N.C.	-	7.9*	360
	Pasquotank River at Mouth of New Begun Cr. (From Pool Point to point of land on opposite shore.)	-	7.6*	-
34	New Begun Creek near Weeksville, N.C.	-	1.6a	15
	New Begun Creek at Mouth of Pailin Creek	-	1.4a	-
35	Pailin Creek at U.S. Naval Air Facility near Weeksville, N.C.	-	0a	.9
36	New Begun Creek at U.S. Naval Air Facility near Weeksville, N.C.	-	0.9a	17
37	Pasquotank River near Old Trap, N.C.	-	4.8*	400
	Pasquotank River at Mouth. (A straight line from Wade Point through Fl G 5 Sec. "1" buoy and Wade Point buoy Fl 5 Sec. 23 ft. 9 M to Camden Point.)	-	0	410 appr
38	Albemarle Sound near Weeksville, N.C.	-	-	-
39	Little River at Woodville, N.C.	R.P.#	13.5*	39
40	Little River near Weeksville, N.C.	-	2.3*	97
	Little River at Mouth. (A straight Line from Stevenson Point through C "1" buoy to opposite shore.)	-	0*	100 appr
41	Albemarle Sound near New Hope, N.C.	-	-	-
42	Perquimans River at Belvedere, N.C.	R.P.#	23.9*	44
43	Perquimans River at Norfolk Southern Railroad Bridge at Hertford, N.C.	-	13.5*	93
	Perquimans River at Mouth of Toms Creek	-	12.3*	-

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
44	Toms Creek at Hertford, N. C.	-	0a	Ind.
45	Perquimans River at U.S. Hwy. #17 Bridge at Hertford, N.C.	R.P.#	12.1a	94
46	Perquimans River at Hertford, N.C.	-	11.3*	94
	Perquimans River at mouth of Raccoon Cr.	-	11.2*	-
	Raccoon Creek at Mouth of Jennies Gut and Gum Pond Run	-	0.5a	-
47 Spec.	Jennies Gut and Gum Pond Run near U.S. Hwy. #17 at Hertford, N.C.	-	1.7a	.2
47	Jennies Gut and Gum Pond Run at U.S. Hwy. #17 at Hertford, N.C.	-	1.5a	-
48A	Jennies Gut and Gum Pond Run near Hertford, N.C.	-	0.6a	-
48	Jennies Gut and Gum Pond Run at Hertford, N.C.	-	0a	.3
49	Raccoon Creek near Hertford, N.C.	R.P.#	1.4a	5.7
50	Raccoon Creek at Hertford, N.C.	R.P.#	0.4a	6.8
51	Perquimans River near Hertford, N.C.	-	11.1*	130
52	Perquimans River above Hertford Beach near Hertford, N.C.	-	8.4*	130
53	Perquimans River at Hertford Beach near Hertford, N.C.	-	7.8*	-
54	Perquimans River at Southern Shores Beach near Hertford, N.C.	-	6.8*	-
55	Perquimans River below Southern Shores Beach near New Hope, N.C.	-	3.9*	150
56	Perquimans River near New Hope, N.C.	-	3.0*	-
57	Perquimans River near Mouth near New Hope, N.C.	-	1.3*	170
	Perquimans River at Mouth. (A straight line from Harvey Point to opposite shore at downstream side of Mouth of Muddy Cr.)	-	0	170 approx.
58	Albemarle Sound at Harvey Point near New Hope, N.C.	-	-	-
59	Yeopim River at Phillips Landing near Bethel, N.C.	-	0.6*	46
	Yeopim River at Mouth. (A straight line from Unnamed Island off Drummond Point to Unnamed Island off point of land downstream from Yeopim Cr. at dead end of road.)	-	0	59 approx.
60	Albemarle Sound at Sandy Point Beach near St. Johns, N.C.	-	-	-
61	Albemarle Sound near St. Johns, N.C.	R.P.#	-	-
62	Albemarle Sound at U.S. Navy Facility near Edenton, N.C.	-	-	-
63	Albemarle Sound near Mackeys, N.C.	-	-	-
64	Kendrick Creek at Roper, N.C.	-	5.3a	12
65	Kendrick Creek at Mackeys, N.C.	R.P.#	0.8a	Ind.
66	Kendrick Creek near Mackey, N.C.	-.	0.3a	Ind.
	Kendrick Creek at Mouth	-	0	Ind.
67A	Unnamed Canal above Creswell High School and Town of Creswell, N.C.	-	0.6a	-
68	Unnamed Canal above Creswell High School at Creswell, N. C.	-	0.5a	-

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
69	Unnamed Canal below Creswell High School at Creswell, N.C.	-	0.4a	-
	Scuppernong River at Mouth of Unnamed Canal	-	16.9*	-
67	Lake Phelps at Pettigrew State Park near Creswell, N.C.	-	5.4a	-
	Scuppernong River at Mouth of Thirty-foot Canal	-	15.2*	-
70	Scuppernong River at Cross Landing, N.C.	-	12.9*	120
71	Scuppernong River near Columbia, N.C.	-	5.7*	180
72	Unnamed Canal to Scuppernong River at Columbia, N.C.	-	0.1a	-
	Scuppernong River at Mouth of Unnamed Canal	-	4.2*	-
73	Scuppernong River at Columbia, N.C.	-	3.8*	190
74	Scuppernong River at River Neck, N.C.	-	0.8*	-
	Scuppernong River at Mouth. (A straight line from Mill Point through Fl. R 5 Sec. Buoy to opposite shore near Colonial Beach.)	-	0	200
75	Albemarle Sound at American Legion Beach at River Neck, N.C.	-	-	-
76	Albemarle Sound at Dewey Pier near Columbia, N.C.	-	-	-
77	Albemarle Sound near Goat Neck, N.C.	-	-	-
78	Alligator River near East Lake, N.C.	-	4.0*	-
	Alligator River at mouth. (A straight line from Long Shoal Point through RN "4" REF & C "3" Buoys to Sound Point on Durant Island.)	-	0	-
79	Albemarle Sound at Mashoes, N.C.	-	-	-
80	Unnamed Tributary to Croatan Sound at Manns Harbor, N.C.	-	-	-
81	Croatan Sound at Manteo, N.C.	R.P.#	-	-
82	Stumpy Point Bay at Stumpy Point, N.C.			
83	Outlet of Small Bay to Oyster Creek at Wanchese, N.C.			
84	Croatan Sound at Roanoke Island Camps, Inc., near Manteo, N.C.			
85	Roanoke Sound at Fort Raleigh, N.C.			
86	Shallowbag Bay of Roanoke Sound at Manteo, N.C.			
87	Roanoke Sound at Manteo, N.C.			
88	Unnamed Canal to Roanoke Sound near Manteo, N.C.			
88A	Unnamed Tributary to Roanoke Sound at Wanchese, N.C.			
89	Atlantic Ocean at Kitty Hawk, N.C.			
90	Atlantic Ocean at Kill Devil Hills, N.C.			
91	Unnamed Fresh Water Lake at Kill Devil Hills, N.C.			
92	Atlantic Ocean at Nags Head, N.C.			
93	Atlantic Ocean at Glenlea Beach, N.C.			
94	Atlantic Ocean at Cape Hatteras, N.C.			

a Miles from mouth of tributary.
* Miles from mouth.

Stage Reference
R.P. Reference Point.
O.S. Outside Staff (Staff Gage).
\# Used for determination of wind tide elevations, not flow.

TABLE 2
PUBLIC GROUND WATER SUPPLIES
PASQUOTANK RIVER BASIN

Location	Pop. 1950	Est. Pop. Served	Ownership	Est. Consumption M.G.D.	No. of Wells	Est. Total Yield M.G.D.	Date Installed	Treatment
Elizabeth City	12,685	20,000	M	1.500	300	2.000	1927	Lime, alum, filter, Cl_2.
Hertford	2,096	1,900	M	0.200	85-90	0.200	1922	Lime, alum, filter, Cl_2.
Harvey Point Seaplane Base (USN) (1)	-	2,500	Fed.	0.250	6	-	1943	Cl_2.
Manteo	635	1,350	M	0.075	2	0.180	1941	Aeration, caustic soda, Cl_2.
U. S. Navy Target Sta., Stumpy Point, N. C.	-	14	Fed.	0.001	1	0.360	1957	Cl_2.
U. S. Coast Guard Air Station, Elizabeth City, N. C.	-	850	Fed.	0.010	Elizabeth City	-	-	No additional treatment
U. S. Naval Air Facility, Weeksville, N. C. (2)	-	1,200	Fed.	0.164	"	-	-	Cl_2.
U. S. Navy Auxiliary Air Sta. Edenton, N. C. (3)	-	1,200	Fed.	0.040	3	0.060	1942	Pressure filters, Cl_2.
U. S. Navy Communications Facility, Buxton, N. C.	-	213	Fed.	0.014	4	-	-	Cl_2.

TABLE 3
INDUSTRIAL GROUND WATER SUPPLIES
PASQUOTANK RIVER BASIN

McPherson Bottling Co., Elizabeth City, N. C.	-	45	P	-	6	-	-	Lime, softner, Cl_2.
Brothers Abattoir, Elizabeth City, N. C. (4)	-	-	P	0.006	1	-	-	

(1) Population and water consumption as proposed.
(2) Base closed in 1957 but is being maintained on standby basis.
(3) Base closed in late 1957.
(4) Daily water consumption estimated for three-month full-time operating period.

TABLE 4
POINTS OF SIGNIFICANT SOURCES OF POLLUTION
PASQUOTANK RIVER BASIN

Location	Pop. 1950	Est. Pop. Served	Owner-ship	Kind of Waste	Est. Gal. Waste M.G.D.	Type Treat-ment	Est. P.E. Before Treatment	Est. P.E. After Treatment	Receiving Stream & Interconnecting Streams to Main R.
Brothers Abattoir, Elizabeth City (1)	-	-	P	I.W.	0.006	Grease Trap	364	364	Ditch to Knobbs Cr. to Pasquotank River
Columbia	1,161	700	M	D.S.	0.070	None	700	700	Scuppernong River.
Elizabeth City	12,685	16,000	M	D.S.& I.W.	1.319	None	18,063	18,063	Pasquotank R., & tributaries
Harvey Point Seaplane Base (USN) (2)	-	2,500	Fed.	D.S.	0.250	Primary & Cl_2	-	-	Albemarle Sound.
Hertford	2,096	2,100	M	D.S.	0.170	None	2,100	2,100	Jenny's Gut & Gum Pond Run & Perquimans River.
McPherson Bottling Co., Elizabeth City (3)	-	42	P	I.W.	-	None	-	-	Ditch to Knobbs Cr. to Pasquotank R.
Manteo	635	1,180	M	D.S.	0.065	None	1,180	1,180	Shallowbag Bay to Roanoke Sound.
U.S. Coast Guard Air Station & U.S. Coast Guard Airplane Repair & Supply Base, Elizabeth City (4)	-	600	Fed.	D.S.& I.W.	0.010	None	300	300	Pasquotank River.
U.S. Navy Auxiliary Air Station, Edenton (5)	-	1,200	Fed.	D.S.	0.040	Primary & Cl_2	1,200	780	Albemarle Sound.
U.S. Naval Air Facility, Weeksville (6)	-	1,200	Fed.	D.S.	0.164	Primary & Cl_2	1,200	780	Pailin Cr. to New Begun Cr. to Pasquotank River.
U.S. Naval Communication Facility, Buxton (7)	-	213	Fed.	D.S.	0.025	Secondary	213	-	
U.S. Navy Target Station, Stumpy Point	-	14	Fed.	D.S.	0.001	Primary & Cl_2	14	9	Canal to Stumpy Point Bay to Pamlico Sound.

TABLE NO. 4
POINTS OF SIGNIFICANT SOURCES OF POLLUTION
(COMMERCIAL SEAFOOD ESTABLISHMENTS)
PASQUOTANK RIVER BASIN

Firm & Location	Avg. No. Employees	Product	Type Waste To Stream	Type Disposal For D.S.	Type Disposal For I.W.	Receiving Stream
R. K. Jagars, Columbia	12	Fresh & Processed Fish & Shrimp	DS &IW	Over Board Toilet	Used for Live-stock food	Scuppernong River.
Globe Fish Co., Elizabeth City	25	Fresh & Processed Fish	DS &IW	Over Board Toilet	Part to Stream Part sold to rendering plant	Pasquotank River.
Walaka Fish Products Co., Mackeys	8	Fresh Fish & Corned Herring	IW	Privy	Part to stream Part used for livestock food	Kendrick Creek.
J. T. Griffin Fish House, Mackeys	5	Fresh Fish & Corned Herring	IW	None	Dumped into Stream	Kendrick Creek.

(1) Waste flow and P.E. estimated on daily basis for the three-month full-time period. Grease trap installed after stream study period. P.E. of 91 shown on map is based on a yearly average.

(2) Connected population and sewage flow as proposed. Plant constructed and ready to be used.

(3) Only intermittent discharges of unknown volume and strength.

(4) Present sewage treatment plant has been abandoned. Separate outfalls are used to discharge untreated D.S. & I.W. to river. If all personnel present at one time the P.E. would be 600 as shown on the map.

(5) Base closed in late 1957.

(6) Base closed in summer of 1957 but is being maintained on standby basis.

(7) The effluent from this plant seeps into sand within a short distance of filter.

TABLE 5
SCHOOLS
PASQUOTANK RIVER BASIN

Name of School	Enrollment	Water Supply (Type)	Lunch Room	Type Treatment	Receiving Stream
Camden Co.					
Camden Co. High School	611	Wells	Yes	Septic tank, nitrification field	None
Marion Anderson	436	Wells	Yes	Septic tank, nitrification field	None
Rosenwald	172	Well	No	Pit Privies	None
South Mills High School	138	Well	Yes	Septic tank, wet well	Joyce Cr. to Pasquotank R.
Chowan Co.					
St. Johns School	75	Well	No	Pit Privies	None
Currituck Co.					
Carrola Village School (1)	100	Well	No	Septic tanks, nitrification fields	None
Currituck School	180	Wells	Yes	Septic tanks, nitrification fields	None
Currituck Union School	518	Well	Yes	Septic tank, nitrification fields	None
Dr. W. E. Grigg School	428	Well	Yes	Septic tank, nitrification fields	None
Knotts Island Elem. School	62	Well	No	Septic tank, nitrification fields	None
Moyock High School	180	Well	Yes	Septic tank, nitrification fields	None
Dare Co.					
Cape Hatteras High School	320	Well	Yes	Septic tank, nitrification field	None
Kitty Hawk Elem. School	140	Well	No	Septic tank, nitrification field	None
Manns Habor Elem. School	37	Well	No	Septic tank, nitrification field	None
Stumpy Point School	22	Well	No	Septic tank, nitrification field	None
Gates Co.					
No School in Pasquotank River Basin					
Hyde Co.					
No schools in Pasquotank River Basin					
Pasquotank Co.					
Central High School	825	Wells	Yes	Septic tanks, nitrification fields	None
Pasquotank Consolidated Elementary School	921	Wells	Yes	Septic tank, sand filter	Charles Cr. to Pasquotank R.
Newland School	109	Wells	Yes	Septic tank	Pasquotank R. Tributary.
Weeksville High School	375	Wells	Yes	Grease trap, septic tanks, nitrification fields	Overflow to ditch to New Begun Creek to Pasquotank River.
Perquimans Co.					
King Street School	433	Town of Hertford	Yes	None	

TABLE)
SCHOOLS
PASQUOTANK RIVER BASIN

Name of School	Enrollment	Water Supply (Type)	Lunch Room	Type Treatment	Receiving Stream
Perquimans Co. High School	535	Town of Hertford	Yes	None	Gum Pond Run and Jenny's Gut to Perquimans River
Perquimans Co. Central Elem. School	500	Well	Yes	Septic tank, nitrification field	None
Perquimans Co. Training Sch.	825	Well	Yes	Septic tank, sand filter trench	Mill Creek to Perquimans R.
Tyrrell Co.					
Travis Elementary School	128	Well	No	Pit privies	None
Tyrrell High School	566	Well	Yes	Grease trap, septic tank, nitrification field	None
Washington Co.					
Creswell High Schools(2)	490	Wells	Yes	Septic tank, nitrification field	To Canal to Scuppernong R.
Creswell Elem. School	200	Well	Yes	Septic tank, filter trench (modified)	None
Washington Co. Union School	976	Well	Yes	Septic tank, nitrification field	None
Roper High School	326	Well	Yes	None	Kendricks Creek

(1) Summer school only, opened in July 1959.
(2) There is evidence that sewage from this school is discharging to a canal which flows under the school building to Scuppernong River.

TABLE 6
PRISON CAMPS
PASQUOTANK RIVER BASIN

Location	Camp Capacity	No. Inmates	No. Personnel	Total Population	Water Supply (Type)	Type Treatment (Sewage)	Receiving Stream
Perquimans Co.							
N. C. Prison Camp #112	100	90	13	103	Well	Septic tank	Ditch to Canal to Perquimans River.
Currituck Co.							
N. C. Prison Camp #104	100	93	14	107	Well	Septic tank	(1) Bullfrog Cr. to North R.
Washington Co.							
N. C. Prison Camp #104 Cannery	100	90	14	104	Well	Septic tank to Lagoons	(2) Deep Creek Tributary.

(1) Bull Frog Creek drains a swamp of considerable size into which effluent is discharged.
(2) A cannery operated at this camp for a part of 1957 canning season but was discontinued. The cannery waste water was discharged to Deep Creek Tributary without treatment during the period of the stream studies.

TABLE 8

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 1 - Located on North Landing River below all sources of pollution in Virginia and above Virginia state line to define condition of water entering North Carolina.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-10	W	1530	30	80	10	6.5	0	23	220	400	6.1	80	1.9	23
8-5	M	1035	28	70	15	5.9	0	20	312	550	5.1	64	1.5	93
9-10	T	1200	28	90	15	7.2	0	23	160	350	7.2	91	1.9	43
9-26	Th	0845	24	210	25	6.7	0	21	136	240	5.0	59	1.8	230
Average			28	110	15	5.9 to 7.2	0	22	207	390	5.9	74	1.8	97

Station 2 - Located on Northwest River near Moyock, to define condition of water entering North Carolina from Virginia.

7-11	Th	1035	29	140	8	6.1	0	15	146	230	6.1	79	2.5	3.6
8-5	M	1120	28	90	15	6.0	0	16	200	480	4.5	57	2.0	28
9-10	T	1330	27	120	8	6.5	0	19	148	40	6.7	83	2.4	<3.6
9-26	Th	1215	24	160	30	6.3	0	19	124	210	4.7	55	2.2	93
Average			27	130	15	6.0 to 6.5	0	17	155	240	5.5	69	2.3	<33

Station 3 - Located on Currituck Sound at Point Harbor Bridge above Albemarle Sound to define salt water intrusion.

6-27	Th	1010	29	28	8	7.8	0	38	750	1,900	7.2	94	1.3	240
7-29	M	1010	27	28	6	7.8	0	37	1,000	3,400	7.0	89	1.3	<3.6
9-4	W	1530	28	24	10	7.3	0	48	1,500	5,100	7.0	93	2.7	<3.6
Average			28	27	8	7.3 to 7.8	0	41	1,083	3,500	7.1	92	1.8	<82

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 4 - Located on Albemarle Sound at Point Harbor to define condition of water in sound.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-27	Th	1115	27	26	10	7.8	0	35	592	1,600	7.5	95	0.7	43
7-29	M	1105	27	26	10	7.6	0	35	820	2,800	7.0	89	1.3	<3.6
9-4	W	1410	29	18	10	6.7	0	33	1,000	2,900	7.3	97	2.3	3.6
Average			28	23	10	6.7 to 7.8	0	34	804	2,400	7.3	94	1.4	<17

Station 5 - Located on Indiantown Creek at bridge north of Indiantown to define salt water intrusion.

6-27	Th	1605	27	-	-	6.5	0	25	80	110	1.0	12	1.3	1,500
7-11	Th	1130	27	320	10	6.0	0	23	118	200	1.6	20	1.7	15
8-5	M	1155	27	210	10	5.8	0	18	200	350	0.6	7	1.7	4,300
9-4	W	0800	27	185	2	5.7	0	13	182	520	2.9	36	2.1	930
9-27	F	0930	21	320	25	6.3	0	30	124	180	0.2	2	2.1	230
Average			26	260	10	5.7 to 6.5	0	22	141	270	1.3	15	1.8	1,400

Station 6 - Located on Intercoastal Waterway near Coinjock to define condition of water northeast of private outfalls at Coinjock, N. C.

6-27	Th	1515	29	55	15	7.4	0	25	216	530	6.9	90	1.1	240
7-29	M	1400	28	55	20	7.1	0	30	396	630	5.7	73	1.9	150
9-4	W	0950	28	36	10	6.7	0	33	580	1,200	7.3	93	2.3	150
Average			28	49	15	6.7 to 7.4	0	29	397	790	6.6	85	1.8	180

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 7 - Located on Intercoastal Waterway at Coinjock to define condition of water southwest of private outfalls and salt water intrusion.

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phen. ppm	Alkalinity Tot. ppm	Acidity Min. ppm	Acidity Tot. ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-27	Th	1440	-	29	60	8	7.6	0	26	-	-	218	510	7.0	91	1.3	-	240
7-29	M	1415	-	28	60	15	7.0	0	29	-	-	340	670	5.1	65	1.7	-	230
9-4	W	1020	-	28	44	15	6.3	0	31	-	-	560	1,100	7.5	96	2.7	-	43
Average			-	28	55	15	6.3 to 7.6	0	29	-	-	373	760	6.5	84	1.9	-	170

Station 8 - Located on North River near Jarvisburg to define condition of water in North River above Albemarle Sound.

6-27	Th	1350	-	28	50	5	7.7	0	26	-	-	248	630	7.4	94	0.6	-	<36
7-29	M	1315	-	28	34	20	7.8	0	29	-	-	630	970	7.6	97	1.5	-	<3.6
9-4	W	1045	-	27	21	8	6.9	0	30	-	-	970	2,000	7.3	92	1.8	-	<3.6
Average			-	28	35	10	6.9 to 7.8	0	28	-	-	616	1,200	7.4	94	1.3	-	<14

Station 9 - Located on Pasquotank River to define salt water intrusion. Drainage Area (sq. mi.) 64

6-18	T	0830	0	26	620	3	4.5	-	-	0	33	30	10	1.0	12	2.6	-	230
7-17	W	1530	0	27	620	10	4.4	-	-	0	55	68	30	0.6	7	1.6	-	23
8-8	Th	1345	0	28	-	-	5.5	-	-	-	-	100	15	0.9	11	2.3	-	230
8-20	T	1440	50	21	240	65	5.5	-	-	0	33	100	11	3.4	38	1.8	610	24,000*
9-6	F	1450	3	25	480	15	5.6	-	-	-	-	92	18	1.5	18	1.7	34	21
10-4	M	1500	-	14	340	40	4.2	-	-	1	66	120	31	3.8	37	1.7	-	93
Average			-	24	460	25	4.2 to 5.6	-	-	0 Usually	47	85	19	1.9	21	2.0	-	4,100

*Heavy runoff from agriculture land following rain.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 10 - Located on Lake Drummond Canal in Virginia below George Washington Ditch from Lake Drummond to define condition of water entering North Carolina.

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Acidity Min. ppm	Acidity Tot. ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-10	W	1640	-	30	440	15	5.0	-	-	0	30	106	26	4.7	62	1.9	-	3.6
8-5	M	0930	-	28	440	35	4.8	-	-	0	104	88	62	1.5	19	1.5	-	93
9-10	T	1115	-	29	420	20	5.2	-	-	0	41	40	60	4.4	57	2.0	-	9.1
9-26	Th	1415	-	25	500	50	5.0	-	-	0	14	34	10	5.2	62	1.6	-	930
Average			-	28	440	30	4.8 to 5.2	-	-	0	47	67	40	4.0	50	1.8	-	260

Station 11 - Located on Pasquotank River above all pollution from Elizabeth City. Drainage Area (sq. mi.) 280

6-18	T	1015	10	31	280	2	5.7	0	11	-	-	63	94	4.5	60	1.1	74	<36
7-17	W	1330	9	29	340	10	5.9	0	12	-	-	100	140	3.3	43	1.7	100	230
8-8	Th	1200	13	29	220	15	6.3	0	14	-	-	180	130	3.7	48	1.9	170	9.1
8-20	T	1020	240	25	280	15	6.4	0	12	-	-	160	150	4.6	55	2.6	4,200	430
9-6	F	1130	19	26	220	5	6.5	0	31	-	-	180	290	4.3	52	2.7	350	2,300
10-14	M	1615	-	18	260	20	6.0	0	11	-	-	120	65	4.3	45	2.0	-	43
Average			-	26	260	10	5.7 to 6.5	0	15	-	-	134	140	4.1	51	2.0	-	<510

Station 12 - Located on Unnamed Tributary to Knobbs Creek above point of untreated industrial waste discharge from Brothers Abattoir in Elizabeth City.

6-19	W	0850		Insufficient water to sample.														
7-15	M	0930	-	26	260	6	6.1	0	40	-	-	138	180	0.2	2	4.8	-	360
8-7	W	1305		Insufficient water to sample.														
9-5	Th	1500	-	24	180	10	6.1	0	27	-	-	116	71	0.0	0	4.4	-	2,300
9-27	F	1100	-	18	460	20	6.4	0	56	-	-	120	40	0.0	0	7.8	-	3.6
Average			-	23	300	10	6.1 to 6.4	0	41	-	-	125	97	0.1	1	5.7	-	890

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 13 - Located on Knobbs Creek 75' below point of untreated industrial waste discharge from Brothers Abattoir.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-19	W	0910	25	360	550	6.6	0	65	90	84	0.0	0	17	7,500
7-15	M	0945	26	280	35	5.8	0	37	96	150	0.0	0	6.3	730
8-7	W	1320	25	280	45	6.7	0	62	164	170	0.0	0	17	23,000
9-5	Th	1520	23	140	20	5.7	0	24	112	55	0.0	0	7.3	4,300
9-27	F	1115	18	440	40	6.5	0	71	140	60	0.0	0	28	93
Average			23	300	140	5.7 to 6.7	0	52	120	100	0.0	0	15	7,100

Station 14 - Located on Knobbs Creek below Station 12 about 0.8 miles below point of discharge of untreated industrial waste from Brothers Abattoir.

6-19	W	0945	26	360	6	6.4	0	56	100	93	0.0	0	5.2	2,300
7-15	M	1000	27	280	35	6.0	0	38	118	150	0.3	4	2.6	910
8-7	W	1335	25	260	10	6.8	0	55	76	150	1.1	13	3.3	150
9-5	Th	1605	23	220	6	6.5	0	38	220	75	0.2	2	5.1	230
9-27	F	1130	19	440	20	6.4	0	32	132	50	0.0	0	3.5	23
Average			24	320	15	6.0 to 6.8	0	44	129	100	0.3	4	3.9	720

Station 15 - Located on Knobbs Creek at U. S. Hwys. # 17 and #158 about 3.2 miles below Station 12 and above point of discharge of untreated sewage from Elizabeth City's outfall to this creek.

6-19	W	1005	29	320	6	6.4	0	35	104	110	0.0	0	3.4	93,000
7-15	M	1020	29	210	20	5.9	0	32	122	170	0.1	1	2.7	2,300
8-7	W	1355	28	180	20	7.1	0	47	140	200	1.1	14	2.7	9,300
9-5	Th	1625	27	160	6	6.9	0	55	220	170	1.5	19	2.8	36
9-27	F	1150	22	210	25	6.7	0	34	148	55	0.0	0	3.1	930
Average			27	220	15	5.9 to 7.1	0	41	147	140	0.5	7	2.9	21,000

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 16 - Located on Knobbs Creek about 400' below point of discharge of untreated sewage from Elizabeth City's 24" outfall to this creek and industrial waste from two lumber companies.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.	Grease ppm
6-19	W	1355	30	300	3	6.5	0	33	106	120	0.6	8	2.7	43,000	-
7-15	M	1135	30	260	20	6.0	0	32	134	180	1.3	17	1.8	2,300	-
8-7	W	1100	27	170	15	7.4	0	55	152	220	0.5	6	1.7	230	-
9-5	Th	1530	27	140	5	6.8	0	53	260	180	2.1	26	4.3	4,300	-
9-27	F	1220	22	170	15	6.7	0	44	156	80	0.1	1	3.8	9,300	-
Average			27	210	10	6.0 to 7.4	0	43	162	160	0.9	12	2.9	12,000	-

Station 17 - Located on ditch to Pasquotank River at Glade Street above points of discharge of untreated sewage from several Elizabeth City outfalls.

6-20	Th	0850	Stream Dry												
7-16	T	0900	Stream Dry												
9-19	Th	1345	24	130	10	5.8	0	65	224	25	1.2	14	2.4	4,300	-
10-11	F	0815	18	80	30	6.9	0	56	160	55	2.2	23	0.9	9,300	-

Station 18 - Located on ditch at Water Street below points of discharge of untreated sewage from several Elizabeth City outfalls to define condition of water and sewage pumped to Pasquotank River.

6-20	Th	1115	26	100	35	6.6	0	194	218	160	0.0	0	40	430,000	16,970
7-16	T	1115	28	180	35	6.4	0	94	164	220	0.0	0	22	93,000	71
8-6	T	1440	27	140	20	7.6	0	112	168	160	0.0	0	21	4,300,000	22
9-5	Th	1700	28	100	15	6.4	0	161	204	180	0.0	0	49	11,000,000	16
10-11	F	0800	19	160	15	6.7	0	67	140	65	3.2	34	1.6	23,000	4,686
Average			26	140	25	6.4 to 7.6	0	126	179	160	0.6	7	27	3,200,000	4,353

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 19 - Located on Pasquotank River to define condition of water below untreated sewage and industrial waste in Knobbs Creek and untreated sewage from two other outfalls above U. S. Hwy. 158 bridge. Average of three points. Drainage Area (sq. mi.) 300

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-18	T	1105	10	32	-	-	6.0	0	15	87	140	4.7	64	2.6	180	31,000
7-17	W	1400	10	30	220	7	6.5	0	18	107	180	4.8	63	3.3	220	12,000
8-8	Th	1230	13	29	180	15	6.7	0	16	190	230	5.2	67	2.5	220	5,300
8-20	T	1100	260	25	230	15	6.9	0	20	173	270	4.6	55	1.7	3,000	11,000
9-6	F	1300	20	26	130	6	6.9	0	21	204	310	5.7	69	2.8	380	32,000
10-14	M	1300	-	17	220	30	6.1	0	16	190	210	5.8	60	1.2	-	3,600
Average			-	27	200	15	6.0 to 6.9	0	18	159	220	5.1	63	2.4	-	16,000

Station 19-R - Located on Pasquotank River to define condition of water below untreated sewage and industrial waste in Knobbs Creek and untreated sewage from two other outfalls above U. S. Hwy. 158 bridge. Sample taken at Right Quarter Point looking downstream.

6-18	T	1055	-	32	160	6	6.2	0	17	81	140	4.6	63	3.2	-	75,000
7-17	W	1400	-	30	210	5	6.5	0	19	94	180	4.9	64	3.3	-	23,000
8-8	Th	1230	-	29	170	20	6.7	0	15	200	220	5.5	71	3.1	-	2,300
8-20	T	1100	-	25	160	10	6.8	0	20	180	300	4.6	55	2.0	-	4,300
9-6	F	1300	-	26	130	6	6.9	0	25	216	300	5.6	68	3.0	-	43,000
10-14	M	1300	-	17	210	35	6.2	0	16	188	200	5.6	58	1.3	-	2,300
Average			-	27	170	15	6.2 to 6.9	0	19	160	220	5.1	63	2.7	-	25,000

TABLE 6

ANALYTICAL RESULTS

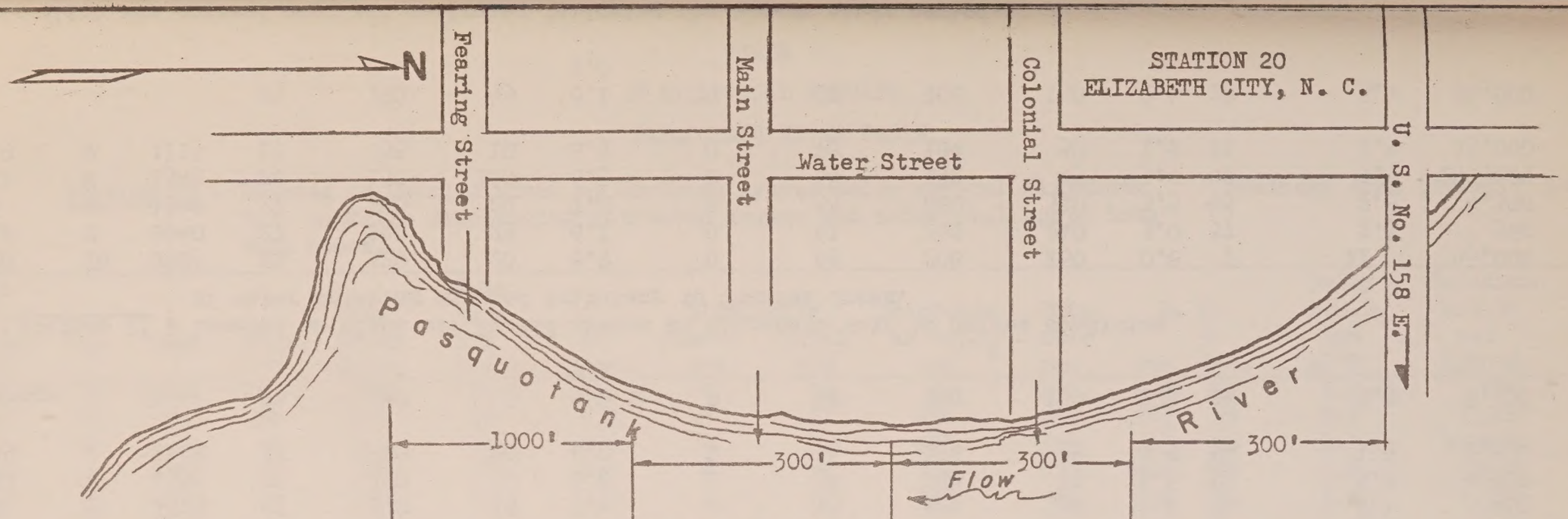
PASQUOTANK RIVER BASIN

Station 19-M - Located on Pasquotank River to define condition of water below untreated sewage and industrial waste in Knobbs Creek and untreated sewage from two other outfalls above U. S. Hwy. 158 bridge. Sample taken at midpoint.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-18	T	1105	32	140	5	6.1	0	14	90	130	4.6	63	2.4	15,000
7-17	W	1400	30	210	10	6.2	0	16	110	190	4.8	63	3.1	2,300
8-8	Th	1230	29	160	20	6.7	0	14	184	230	4.9	63	2.5	4,300
8-20	T	1100	25	360	15	7.0	0	18	172	270	4.7	56	1.5	15,000
9-6	F	1300	26	130	5	6.7	0	20	200	320	5.9	72	2.6	43,000
10-14	M	1300	17	230	30	6.1	0	17	192	200	6.0	62	1.1	4,300
Average			27	210	15	6.1 to 7.0	0	17	158	220	5.2	63	2.2	14,000

Station 19-L - Located on Pasquotank River to define condition of water below untreated sewage and industrial waste in Knobbs Creek and untreated sewage from two other outfalls above U. S. Hwy. 158 bridge. Sample taken at Left Quarter Point looking downstream.

6-18	T	1120	32	-	-	5.8	0	13	90	140	5.0	68	2.1	3,900
7-17	W	1400	30	230	5	6.7	0	18	118	170	4.6	60	3.7	9,300
8-8	Th	1230	29	220	10	6.8	0	19	188	230	5.1	66	2.0	9,300
8-20	T	1100	25	160	15	6.9	0	23	168	250	4.6	55	1.7	15,000
9-6	F	1300	26	120	6	6.9	0	23	196	320	5.6	68	2.9	9,300
10-14	M	1300	17	230	20	6.1	0	15	176	230	5.8	60	1.2	4,300
Average			27	190	10	5.8 to 6.9	0	19	156	220	5.1	63	2.3	8,500



DATE	D	C	B	A	TIME
6-13-57	46,000	24,000	21,000	9,300	0920
7-15-57	2,300	43,000	150,000	93,000	1200
8- 6-57	23,000	2,300	4,300	930	0940
9-10-57	46,000	110,000	110,000	24,000	1600
10- 9-57	43,000	1,100,000	43,000	240,000	1300
Average	32,000	260,000	66,000	73,000	

Note: Samples collected at designated sites 100 feet from shore.

PAS QUOTANK RIVER AT ELIZABETH CITY, N. C.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 21 - Located on ditch at McMorin Street below points of discharge of untreated sewage from several Elizabeth City outfalls.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-20	Th	0905	25	210	35	6.7	0	365	247	260	0.0	0	73	<36,000
7-16	T	0925	28	170	20	6.7	0	241	280	280	0.0	0	24	430,000
8-6	T	1320	27	200	45	7.2	0	224	352	170	0.0	0	55	>11,000,000
9-11	W	1525	26	130	40	6.8	0	108	164	150	0.9	11	19	230,000
Average			27	180	35	6.7 to 7.2	0	235	261	220	0.2	3	43	>2,900,000

Station 22 - Located on Charles Creek at Harrington Road to define condition of water. Drainage Area (sq. mi.) 2.9

6-20	Th	0935	26	280	5	6.1	0	50	201	200	0.8	10	5.0	23,000
7-16	T	0955	27	240	20	6.0	0	45	176	250	1.6	20	2.8	360
8-6	T	1325	27	170	15	7.1	0	75	524	150	2.1	26	5.1	430
9-11	W	1540	27	120	10	6.6	0	55	164	15	2.6	32	3.2	4,300
10-9	W	1100	17	80	20	6.0	0	16	136	25	3.3	34	1.3	2,300
Average			25	180	15	6.0 to 7.1	0	48	240	130	2.1	24	3.5	6,100

*Station 23 - Located on ditch off Euclid Avenue at Elizabeth City to define condition of water entering unnamed tributary to Charles Creek.

6-20	Th	0925	25	320	20	6.9	0	85	208	150	0.6	7	11	43,000
7-16	T	0940	27	240	25	6.1	0	61	268	210	3.0	37	2.7	360
8-6	T	1340	27	200	20	7.0	0	53	680	310	3.5	43	2.5	4,300
9-11	W	1545	28	130	160	6.5	0	64	192	45	3.7	47	9.5	240,000
10-9	W	1115	17	55	10	6.3	0	70	184	50	1.2	12	1.4	15,000
			25	190	45	6.1 to 7.0	0	67	306	150	2.4	29	5.4	61,000

*This ditch was covered over and destroyed following the stream study period.

TABLE 6

ANALYTICAL RESULTS

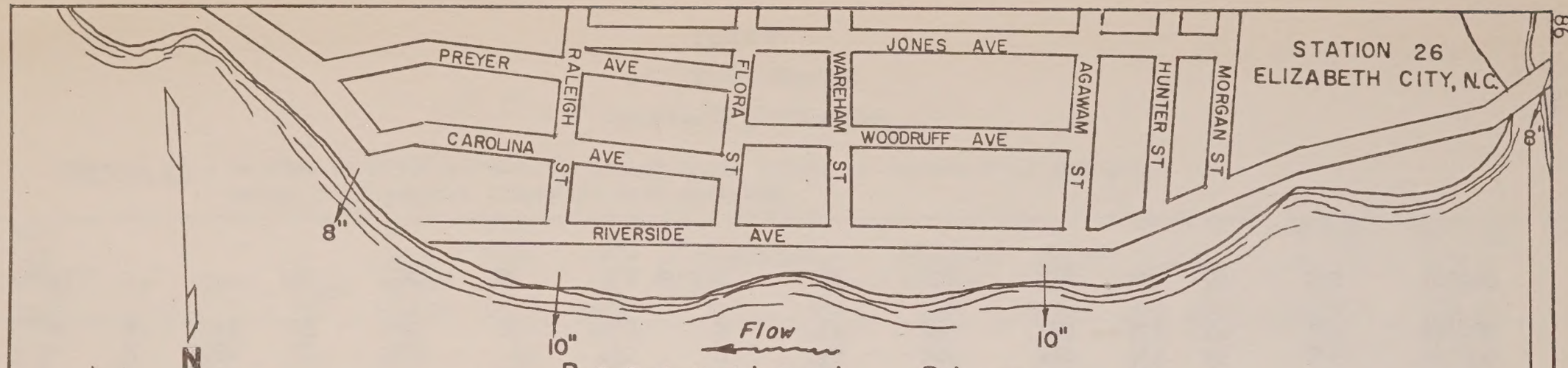
PASQUOTANK RIVER BASIN

Station 24 - Located on Charles Creek at Southern Avenue below several Elizabeth City outfalls discharging untreated sewage and industrial waste into this creek. Drainage Area (sq.mi.) 3.0

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-20	Th	1040	27	320	15	6.6	0	30	93	150	1.7	21	3.2	3,600
7-16	T	1040	28	220	20	5.9	0	22	260	220	2.3	29	2.1	1,500
8-6	T	1420	28	200	25	6.8	0	31	812	310	3.6	46	2.5	43,000
9-11	W	1610	27	120	15	6.7	0	43	188	200	6.1	76	3.6	9,300
10-9	W	1135	17	100	40	5.9	0	17	116	24	3.0	31	1.2	9,300
Average			25	190	25	5.9 to 6.8	0	29	294	180	3.3	41	2.5	13,000

Station 25 - Located at mouth of Charles Creek to define quality of water below all private and public outfalls at Elizabeth City discharging untreated sewage and industrial waste into this creek. Drainage Area (sq.mi.) 3.09

6-20	Th	1100	27	340	6	5.8	0	13	77	120	2.9	36	1.9	43,000
7-16	T	1100	28	220	15	6.0	0	16	244	200	3.9	49	1.5	43,000
8-6	T	1430	29	170	35	7.2	0	30	924	260	5.3	67	3.4	43,000
9-11	W	1630	27	130	5	6.6	0	40	196	340	5.5	68	2.6	43,000
10-9	W	1215	19	230	50	6.0	0	13	124	120	5.0	53	1.5	23,000
Average			26	220	20	5.8 to 7.2	0	22	313	210	4.5	55	2.2	39,000



1200' 1800' 1650' 1200

COLIFORM MPN/100

D	C	B	A	TIME	DATE
4,300	46,000	15,000	46,000	0950	6-13-57
230	930	9,300	23,000	1215	7-15-57
93,000	43,000	9,300	23,000	1000	8-6-57
2,300	>110,000	>110,000	24,000	1630	9-20-57
43,000	23,000	9,300	240,000	1315	10-9-57
29,000	>45,000	>31,000	71,000		Average

Note: Samples collected at designated sites 100 feet from shore.

PASQUOTANK RIVER ADJACENT TO RIVERSIDE AVE.
ELIZABETH CITY, N. C.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 27 - Located on Pasquotank River to define condition of water below all private and public outfalls in Elizabeth City discharging untreated sewage and industrial waste into the river and its tributaries. Average of 3 points.

Drainage Area (sq. mi.) 320

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-18	T	1250	10	32	-	-	6.2	0	14	100	170	5.9	80	4.2	280	<790
7-17	W	1115	10	28	130	25	6.5	0	18	168	270	6.1	77	2.0	140	760
8-8	Th	1045	13	27	95	15	7.0	0	18	197	260	5.5	68	1.5	130	<44
8-20	T	1300	270	25	90	15	7.5	0	17	175	330	6.0	72	1.0	1,800	2,200
9-6	F	1038	21	26	60	7	6.8	0	22	267	560	6.4	79	2.0	280	3,700
10-14	M	1235	-	17	100	15	6.5	0	21	370	430	7.1	73	1.2	-	1,900
Average			-	26	95	15	6.2 to 7.5	0	18	213	340	6.2	75	2.0	-	1,600

Station 27-R - Located on Pasquotank River to define condition of water below all private and public outfalls in Elizabeth City discharging untreated sewage and industrial waste into the river and its tributaries. Sample taken at Right Quarter Point looking downstream.

6-18	T	1240	-	33	170	2	6.2	0	14	116	170	5.8	80	4.6	-	2,300
7-17	W	1115	-	28	130	25	6.6	0	20	172	300	6.4	81	2.2	-	2,100
8-8	Th	1045	-	27	90	15	7.1	0	14	220	280	5.6	69	1.5	-	<3.6
8-20	T	1300	-	25	120	15	7.4	0	19	180	300	5.9	70	0.6	-	4,300
9-6	F	1042	-	26	60	8	6.8	0	26	272	580	6.5	80	2.0	-	9,300
10-14	M	1235	-	17	140	15	6.3	0	17	340	400	6.7	69	1.4	-	4,300
Average			-	26	120	15	6.2 to 7.4	0	18	217	340	6.2	75	2.1	-	<3,700

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 27-M - Located on Pasquotank River to define condition of water below all private and public outfalls in Elizabeth City discharging untreated sewage and industrial waste into the river and its tributaries. Samples taken at midpoint.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-18	T	1250	32	140	6	6.3	0	15	90	170	6.2	84	2.7	< 36
7-17	W	1115	28	120	10	6.2	0	16	110	190	6.2	78	1.9	150
8-8	Th	1045	27	80	15	6.9	0	20	160	260	5.6	69	1.3	36
8-20	T	1300	25	85	15	7.6	0	18	184	350	6.1	73	1.2	750
9-6	F	1038	26	65	8	6.6	0	18	268	540	6.2	76	2.2	750
10-14	M	1235	17	90	10	6.5	0	21	380	430	7.2	74	1.0	930
Average			26	95	10	6.2 to 7.6	0	18	199	320	6.3	76	1.7	<440

Station 27-L - Located on Pasquotank River to define condition of water below all private and public outfalls in Elizabeth City discharging untreated sewage and industrial waste into the river and its tributaries. Samples taken at Left Quarter Point, looking downstream.

6-18	T	1300	30	-	-	6.2	0	14	94	170	5.6	73	5.4	< 36
7-17	W	1115	28	140	40	6.4	0	15	152	240	5.7	72	2.0	23
8-8	Th	1045	27	120	20	7.0	0	20	212	240	5.4	67	1.8	93
8-20	T	1300	25	70	15	7.5	0	15	160	350	6.1	73	1.3	1,500
9-6	F	1035	26	60	6	6.9	0	23	260	550	6.6	81	1.7	930
10-14	M	1235	17	70	15	6.5	0	26	384	450	7.3	75	1.3	430
Average			26	90	20	6.2 to 7.5	0	19	210	330	6.1	74	2.3	< 500

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 28 - Located on Pasquotank River about 1.8 miles below Station 27 on this river to define condition of water above U. S. Coast Guard Air Station near Elizabeth City. (Average of 3 points). Drainage Area (sq. mi.) 340

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-18	T	1335	10	30	-	-	7.0	0	16	93	200	6.4	84	4.2	280	< 330
7-17	W	1045	10	28	110	7	6.5	0	18	146	240	5.9	75	1.9	130	41
8-8	Th	1030	13	27	85	20	7.0	0	20	189	230	5.6	69	1.5	130	5.4
8-20	T	1315	290	25	65	20	7.5	0	25	239	400	6.2	74	1.5	2,900	60
9-6	F	1025	22	26	45	7	6.9	0	25	321	620	7.1	87	2.1	310	3,200
10-14	M	1215	-	17	95	10	6.8	0	23	600	430	7.5	77	1.1	-	1,700
Average			-	26	80	15	6.5 to 7.5	0	21	265	350	6.5	78	2.1	-	< 890

Station 28-R - Located on Pasquotank River about 1.8 miles below Station 27 on this river to define condition of water above U. S. Coast Guard Air Station near Elizabeth City. Sample taken at Right Quarter Point, looking downstream.

6-18	T	1315	-	31	-	-	7.2	0	17	84	190	6.4	86	3.4	-	< 36
7-17	W	1045	-	28	80	6	6.6	0	20	156	240	6.0	76	1.9	-	23
8-8	Th	1030	-	27	90	15	7.0	0	19	180	200	5.6	69	1.9	-	9.1
8-20	T	1315	-	25	70	20	7.5	0	21	240	390	6.1	73	1.8	-	93
9-6	F	1020	-	26	46	10	6.9	0	25	332	570	7.1	87	2.3	-	930
10-14	M	1215	-	17	120	15	6.8	0	21	620	430	7.1	73	1.4	-	4,300
Average			-	26	80	15	6.6 to 7.5	0	21	269	340	6.4	77	2.1	-	< 900

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 28-M - Located on Pasquotank River about 1.8 miles below Station 27 on this river to define condition of water above U. S. Coast Guard Air Station near Elizabeth City. Sample taken at midpoint.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-18	T	1335	30	170	8	6.9	0	16	100	200	6.6	86	4.6	<36
7-17	W	1045	28	130	8	6.5	0	16	156	230	6.1	77	1.9	93
8-8	Th	1030	27	85	15	7.1	0	20	196	250	5.7	71	1.8	3.6
8-20	T	1315	25	65	20	7.6	0	25	232	400	6.3	75	1.0	43
9-6	F	1025	25	44	6	6.8	0	23	320	630	7.1	85	2.2	4,300
10-14	M	1215	17	70	10	6.9	0	23	600	410	7.8	80	1.0	230
Average			25	95	10	6.5 to 7.6	0	21	267	350	6.6	79	2.1	<780

Station 28-L - Located on Pasquotank River about 1.8 miles below Station 27 on this river to define condition of water above U. S. Coast Guard Station near Elizabeth City. Sample taken at Left Quarter Point, looking downstream.

6-18	T	1315	30	180	10	6.8	0	16	96	200	6.5	85	4.5	910
7-17	W	1045	28	120	6	6.4	0	19	128	250	5.6	71	1.8	7.3
8-8	Th	1030	26	85	35	7.0	0	21	192	230	5.5	67	0.9	3.6
8-20	T	1315	25	65	20	7.5	0	28	244	400	6.3	75	1.6	43
9-6	F	1030	26	44	5	7.1	0	28	312	650	7.2	88	1.7	4,300
10-14	M	1215	17	90	10	6.8	0	25	590	450	7.5	77	0.8	430
Average			25	95	15	6.4 to 7.5	0	23	260	360	6.4	77	1.9	950

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 29 - Located on Pasquotank River in area of discharge of untreated sewage from the U. S. Coast Guard Station near Elizabeth City. Average of 3 point grid opposite pump station.

Drainage Area (sq. mi.) 340*

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-10	W	0945	28	150	8	6.9	0	19	125	230	6.3	80	1.4	890
8-12	M	1000	28	65	10	7.2	0	19	174	300	5.2	66	1.2	10,000
9-20	F	1430	27	60	15	7.4	0	20	231	470	7.9	98	2.1	4,700
Average			28	90	10	6.9 to 7.4	0	19	177	330	6.5	81	1.6	5,200

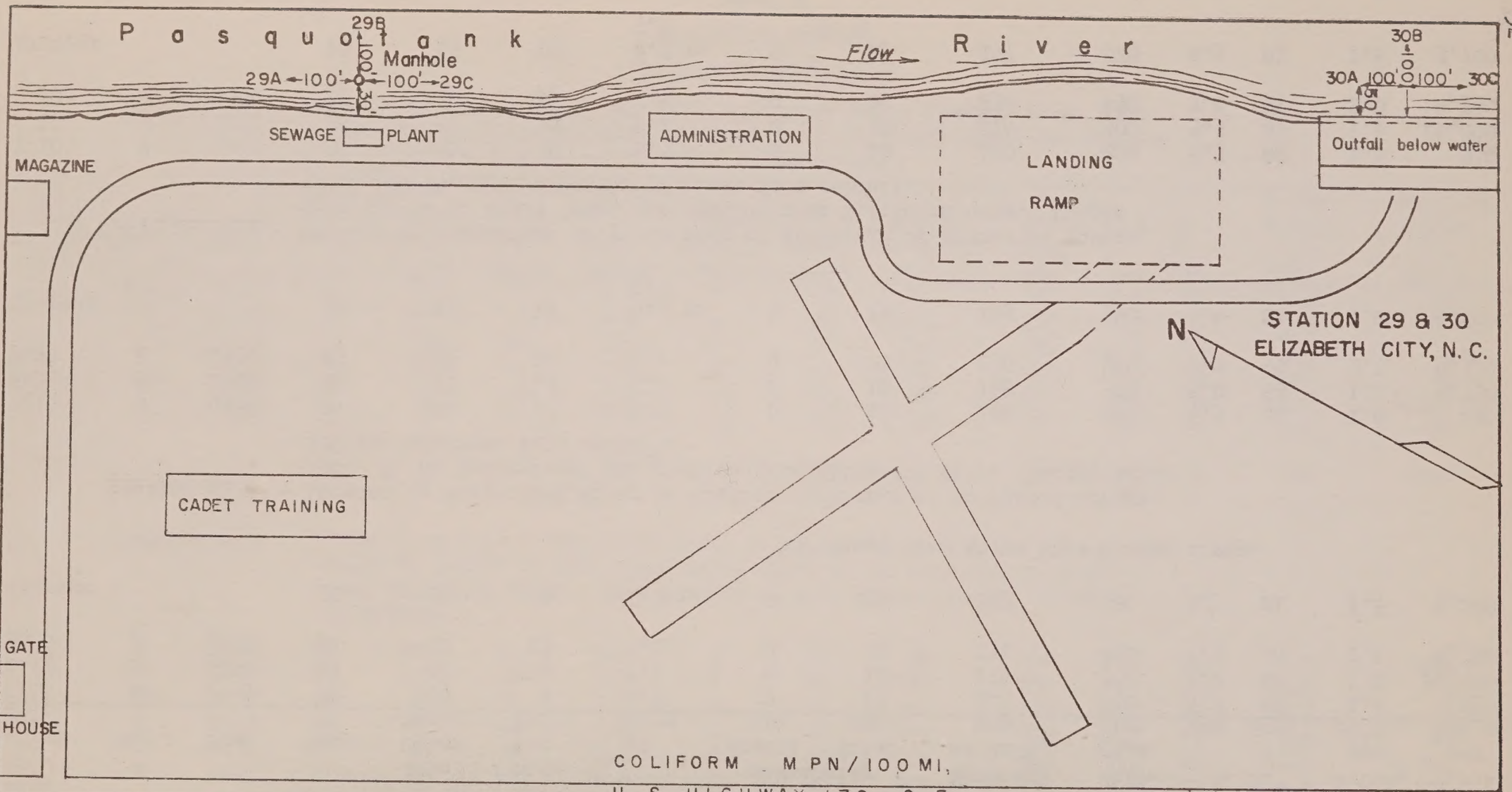
*Drainage area above line across river.

Station 29-A - Located on Pasquotank River in area of discharge of untreated sewage from U. S. Coast Guard Air Station near Elizabeth City. Sample taken 100 ft. upstream from outfall.

7-10	W	0930	28	140	10	6.9	0	20	144	260	6.3	81	1.4	230
8-12	M	1000	28	55	10	7.2	0	18	168	300	5.0	63	1.2	4,300
9-20	F	1430	27	60	20	7.3	0	20	236	470	7.9	98	2.3	9,300
Average			28	85	15	6.9 to 7.3	0	19	183	340	6.4	81	1.6	4,600

Station 29-B - Located on Pasquotank River in area of discharge of untreated sewage from the U. S. Coast Guard Air Station near Elizabeth City. Sample taken 100 ft. toward center of river from outfall.

7-10	W	0945	28	140	6	6.8	0	18	120	200	6.3	80	1.6	930
8-12	M	1000	28	55	10	7.2	0	19	174	300	5.3	67	1.1	24,000
9-20	F	1430	27	60	15	7.4	0	20	236	450	7.8	97	2.0	4,300
Average			28	85	10	6.8 to 7.4	0	19	177	320	6.5	81	1.6	9,700



DATE	TIME	29A	29B	29C
7-10-57	0930	230	930	1,500
8-12-57	1000	4,300	24,000	2,300
9-20-57	1430	9,300	4,300	430
Average		4,600	9,700	1,400

DATE	TIME	30A	30B	30C
7-10-57	0930	750	23	43
8-12-57	1000	430	93	93
9-20-57	1430	230	230	93
		470	120	76

PASQUOTANK RIVER AT U. S. COAST GUARD STATION

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 29-C - Located on Pasquotank River in area of discharge of untreated sewage from the U. S. Coast Guard Station near Elizabeth City. Sample taken 100 feet downstream from outfall.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chromium Hex. ppm	Chromium Tot. ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.	Copper ppm	Cyanide ppm
7-10	W	0955	28	160	8	6.9	0	19	112	-	-	220	6.4	81	1.1	1,500	-	-
8-12	M	1000	28	85	10	7.2	0	19	180	-	-	290	5.3	67	1.4	2,300	-	-
9-20	F	1430	27	65	15	7.4	0	21	220	-	-	490	7.9	98	2.1	430	-	-
Average			28	100	10	6.9 to 7.4	0	20	171	-	-	330	6.5	82	1.5	1,400	-	-

Station 30 - Located on Pasquotank River in area of discharge of untreated plating waste from U. S. Coast Guard Repair Station near Elizabeth City. Average of three point grid near outfalls.

Drainage Area (sq. mi.) 340*

7-10	W	1025	28	150	10	6.9	0	21	111	0	0	250	6.2	78	0.9	270	< .011	.01
8-12	M	1020	28	80	10	7.1	0	19	173	0	<0.1	320	5.1	65	1.3	210	.003	<.01
9-20	F	1500	27	41	35	7.2	0	19	224	0	0	500	7.9	98	2.0	180	< .009	<.01
Average			28	90	20	6.9 to 7.2	0	20	169	0	<0.1	360	6.4	80	1.4	220	< .008	<.01

* Drainage area above line across river.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 30-A - Located on Pasquotank River in area of discharge of untreated plating waste from U. S. Coast Guard Repair Station near Elizabeth City. Sample taken 50 ft. from shore and 100 ft. upstream from outfalls.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phen. ppm	Alkalinity Tot. ppm	Hardness as $CaCO_3$ ppm	Chromium Hex. ppm	Chromium Tot. ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.	Copper ppm	Cyanide ppm
7-10	W	1010	28	160	10	6.8	0	22	124	0	0	240	6.2	78	0.8	750	.016	.01
8-12	M	1020	28	85	10	7.2	0	19	180	0	<0.1	330	5.1	64	1.3	430	0	0
9-20	F	1500	27	28	40	7.2	0	18	236	0	0	500	7.9	99	2.2	230	<.008	.01
verage			28	90	20	6.8 to 7.2	0	20	180	0	<0.1	360	6.4	80	1.4	470	<.008	<.01

Station 30-B - Located on Pasquotank River in area of discharge of untreated plating waste from U. S. Coast Guard Repair Station near Elizabeth City. Sample taken 100 ft. from shore opposite outfalls.

7-10	W	1025	27	170	10	6.8	0	20	102	0	0	280	6.1	76	1.0	23	<.008	.02
8-12	M	1020	28	75	10	7.2	0	20	172	0	0	310	5.1	64	1.4	93	.008	0
9-20	F	1500	27	65	40	7.1	0	19	216	0	0	480	7.9	98	2.1	230	.01	0
verage			27	100	20	6.8 to 7.2	0	20	163	0	0	360	6.4	79	1.5	120	<.009	<.01

Station 30-C - Located on Pasquotank River in area of discharge of untreated plating waste from U. S. Coast Guard Repair Station near Elizabeth City. Sample taken 50 ft. from shore and 100 ft. downstream from outfalls.

-10	W	1040	29	120	10	7.0	0	20	108	0	0	230	6.2	80	1.0	43	.008	.01
-12	M	1020	28	85	10	6.9	0	18	166	0	0	320	5.2	66	1.3	93	0	.01
-20	F	1500	27	31	30	7.4	0	19	220	0	0	530	7.8	98	1.8	93	<.008	0
verage			28	80	15	6.9 to 7.4	0	19	165	0	0	360	6.4	81	1.4	76	<.005	<.01

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 31 - Located on Pasquotank River to define quality of water for bathing at Treasure Point Beach near Elizabeth City.

Date Collected 1957	Day	Time	Coliform M.P.N. per 100 ml. "A"	Coliform M.P.N. per 100 ml. "B"	Coliform M.P.N. per 100 ml. "C"	Coliform M.P.N. per 100 ml. "D"
6-24	M	1400	23	93	23	43
7-11	Th	1230	23	23	< 3.6	23
8-5	M	1240	930	430	230	150
10-8	T	0900	1,500	2,300	4,300	9,300
Average			620	710	< 1,100	2,400

Station 32 - Located on Pasquotank River to define quality of water for bathing at Elizabeth City Beach near Elizabeth City.

6-24	M	1430	9.1	3.6	43	93
7-11	Tn	1210	150	150	430	43
8-5	M	1220	93	230	43	930
10-8	T	0930	4,300	9,300	430	15,000
Average			1,100	2,400	240	4,000

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 33 - Located on Pasquotank River 3.0 miles below untreated domestic sewage and plating waste from U. S. Coast Guard installations and about 0.5 of a mile above New Begun Creek. Average of 3 points. Drainage Area (sq. mi.) 360

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-18	T	1430	10	30	-	-	6.9	0	17	95	200	6.4	84	2.0	140	<140
7-17	W	1000	10	28	70	10	6.8	0	20	188	320	5.8	73	1.8	120	<3.6
8-8	Th	0750	13	26	55	15	7.0	0	22	247	370	5.7	69	1.5	130	<3.6
8-20	T	1540	310	24	38	25	6.9	0	20	292	630	7.4	88	1.1	2,300	50
9-6	F	0952	23	26	31	6	7.4	0	31	435	1,000	7.5	92	2.1	330	<3.6
10-14	M	1120	-	17	35	9	7.0	0	29	770	530	8.4	87	1.5	-	210
Average			-	25	45	15	6.8 to 7.4	0	23	338	510	6.9	82	1.7	-	<68

Station 33-R - Located on Pasquotank River 3.0 miles below untreated domestic sewage and plating waste from U. S. Coast Guard installations and about 0.5 of a mile above New Begun Creek. Sample taken at right quarter point looking downstream.

6-18	T	1415	-	30	180	6	6.9	0	16	92	200	6.4	84	2.6	-	<36
7-17	W	1000	-	28	55	10	7.0	0	22	208	280	5.9	74	1.9	-	<3.6
8-8	Th	0750	-	26	60	20	7.3	0	22	244	400	5.7	69	2.2	-	<3.6
8-20	T	1540	-	24	44	25	6.7	0	18	284	620	7.2	85	0.7	-	15
9-6	F	0955	-	26	28	6	7.3	0	31	452	1,000	7.4	91	2.0	-	3.6
10-14	M	1120	-	17	44	6	7.0	0	29	720	520	8.6	89	1.6	-	430
Average			-	25	70	10	6.7 to 7.3	0	23	333	500	6.9	82	1.8	-	<82

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 33-M - Located on Pasquotank River 3.0 miles below untreated sewage and plating waste from U. S. Coast Guard installations and about 0.5 of a mile above New Begun Creek. Sample taken at mid-point.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-18	T	1430	30	160	8	6.8	0	17	94	210	6.3	83	2.0	360
7-17	W	1000	28	100	10	6.7	0	20	180	310	5.7	72	1.8	<3.6
8-8	Th	0750	26	55	15	7.0	0	21	256	330	5.6	68	1.2	<3.6
8-20	T	1540	24	44	20	6.9	0	20	300	640	7.4	88	1.3	43
9-6	F	0952	26	34	6	7.4	0	32	432	1,000	7.4	91	2.2	3.6
10-14	M	1120	17	34	10	7.2	0	28	780	550	8.4	87	1.6	93
Average			25	70	10	6.7 to 7.4	0	23	340	510	6.8	82	1.7	<84

Station 33-L - Located on Pasquotank River 3.0 miles below untreated sewage and plating waste from U. S. Coast Guard installations and about 0.5 of a mile above New Begun Creek. Sample taken at left quarter point, looking downstream.

6-18	T	1445	30	-	-	6.9	0	17	98	190	6.5	85	1.5	<36
7-17	W	1000	28	55	10	6.6	0	18	176	370	5.7	72	1.7	<3.6
8-8	Th	0750	26	49	10	6.9	0	22	240	370	5.7	69	1.2	<3.6
8-20	T	1540	24	26	30	6.9	0	23	292	630	7.7	91	1.3	93
9-6	F	0950	25	31	6	7.5	0	30	420	1,000	7.7	93	2.2	<3.6
10-14	M	1120	17	28	10	7.0	0	30	800	530	8.3	86	1.4	93
Average			25	38	15	6.6 to 7.5	0	23	338	520	6.9	83	1.6	<39

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 34 - Located on New Begun Creek below Weeksville and about 0.5 of a mile above Pailin Creek receiving sewage effluent from U. S. Naval Air Facility. Drainage Area (sq. mi.) 15

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-24	M	1115	30	120	6	7.3	0	25	118	220	6.6	87	0.7	430
7-18	Th	1320	28	80	15	6.9	0	22	164	350	7.3	92	3.8	230
8-7	W	1000	26	-	-	7.9	0	26	360	520	6.8	84	2.9	930
9-10	T	1540	29	42	10	7.2	0	21	360	720	8.5	110	3.1	23
Average			28	80	10	6.9 to 7.9	0	24	251	450	7.3	93	2.6	400

Station 35 - Located on Pailin Creek at mouth below point of discharge of treated domestic sewage from U. S. Naval Air Facility. Drainage Area (sq. mi.) .9

6-24	M	1100	30	120	15	7.1	0	25	122	230	7.0	92	3.4	24,000
7-18	Th	1305	28	90	25	6.6	0	26	188	340	6.0	76	6.0	1,100
8-7	W	0950	26	80	50	7.2	0	29	544	490	4.2	51	3.8	2,300
9-10	T	1335	30	44	15	7.3	0	29	310	640	8.9	118	5.0	2,100
Average			29	85	25	6.6 to 7.3	0	27	291	430	6.5	84	4.6	7,400

Station 36 - Located on New Begun Creek about 0.5 of a mile below Pailin Creek receiving sewage effluent from U. S. Naval Air Facility. Drainage Area (sq. mi.) 17

6-24	M	1035	30	100	15	6.9	0	22	135	230	6.4	84	1.7	93
7-18	Th	1250	28	70	15	7.1	0	27	200	330	7.4	93	4.1	430
8-7	W	0940	26	70	30	7.8	0	26	740	480	6.7	82	3.2	230
9-10	T	1530	29	39	10	7.1	0	25	350	860	9.2	120	4.3	93
Average			28	70	20	6.9 to 7.8	0	25	356	480	7.4	95	3.3	210

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 37 - Located on Pasquotank River 3.0 miles below New Begun Creek, below all sources of pollution in this river and 3.0 miles above Albemarle Sound. Average of 3 points. Drainage Area (sq.mi.) 400

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-18	T	1530	10	30	120	9	7.1	0	20	132	170	6.7	88	2.0	140	<48
7-17	W	0900	10	28	50	10	7.1	0	28	248	520	6.3	80	2.0	140	<4.8
8-8	Th	0920	13	26	45	20	6.9	0	25	273	590	5.8	71	1.7	150	<3.6
8-20	T	1605	340	24	40	30	7.0	0	20	331	680	7.6	90	1.2	2,800	<16
9-6	F	0930	25	26	27	10	7.3	0	30	539	1,200	7.5	92	2.2	370	<3.6
10-14	M	1030	-	16	-	-	7.1	0	30	780	600	8.7	88	1.3	-	65
Average			-	25	55	15	6.9 to 7.3	0	26	384	630	7.1	85	1.7	-	<24

Station 37-R - Located on Pasquotank River 3.0 miles below New Begun Creek below all sources of pollution in this river and 3.0 miles above Albemarle Sound. Sample taken from right quarter point looking downstream.

6-18	T	1320	-	30	120	10	7.1	0	21	128	170	6.7	88	2.3	-	73
7-17	W	0900	-	28	49	10	7.1	0	27	220	430	6.4	81	2.2	-	<3.6
8-8	Th	0920	-	26	46	15	6.8	0	25	256	550	5.5	67	2.4	-	<3.6
8-20	T	1605	-	24	44	25	6.7	0	20	320	680	7.7	91	1.3	-	<3.6
9-6	F	0925	-	26	26	15	7.4	0	30	544	1,200	7.2	89	2.2	-	3.6
10-14	M	1030	-	16	55	20	7.0	0	28	750	580	8.7	88	1.3	-	93
Average				25	55	15	6.7 to 7.4	0	25	370	600	7.0	84	2.0	-	<31

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 37-M - Located on Pasquotank River 3.0 miles below New Begun Creek, below all sources of pollution in this river and 3.0 miles above Albemarle Sound. Sample taken from mid-point.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-18	T	1530	30	120	8	7.2	0	21	132	170	6.6	87	3.0	<36
7-17	W	0900	28	50	10	7.0	0	33	264	450	6.2	79	1.8	<3.6
8-8	Th	0920	26	39	20	7.0	0	24	280	610	6.0	74	1.3	<3.6
8-20	T	1605	24	34	30	7.0	0	19	340	670	7.6	90	0.9	3.6
9-6	F	0930	25	26	8	7.2	0	32	540	1,200	7.8	94	2.3	3.6
10-14	M	1030	16	31	10	7.4	0	32	780	580	8.5	86	1.3	93
Average			25	50	15	7.0 to 7.4	0	27	389	610	7.1	85	1.8	<24

Station 37-L - Located on Pasquotank River 3.0 miles below New Begun Creek, below all sources of pollution in this river and 3.0 miles above Albemarle Sound. Sample taken at left quarter point looking downstream.

6-18	T	1545	29	120	8	7.0	0	19	136	160	6.7	86	0.8	<36
7-17	W	0900	28	50	10	7.1	0	25	260	690	6.4	82	1.9	7.3
8-8	Th	0920	26	49	25	6.9	0	25	284	620	6.0	74	1.5	<3.6
8-20	T	1605	24	42	35	7.1	0	22	332	690	7.6	90	1.3	43
9-6	F	0935	26	28	6	7.3	0	29	532	1,200	7.5	92	2.2	<3.6
10-14	M	1030	16	24	10	7.1	0	29	800	630	8.8	89	1.4	9.1
Average			25	50	15	6.9 to 7.3	0	25	391	670	7.2	86	1.5	<17

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 38 - Located on Albemarle Sound between mouth of Pasquotank River and mouth of Flatty Creek to define condition of water in sound. Sample taken at mid-depth approximately 1,000 yards from shore.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-21	F	0905	27	46	15	7.3	0	26	185	430	7.1	88	0.8	3.6
7-18	Th	1040	26	28	8	6.6	0	25	360	1,000	7.6	93	1.9	9.1
8-12	M	1130	27	28	15	7.9	0	32	456	1,100	6.6	82	0.9	<3.6
Average			27	34	15	6.6 to 7.9	0	28	334	840	7.1	88	1.2	<5.4

Station 39 - Located on Little River at Woodville to define salt water intrusion. Drainage Area (sq. mi.) 39

6-24	M	0930	25	240	15	6.0	0	15	72	58	0.6	7	3.2	230
7-18	Th	1405	27	180	5	5.9	0	20	136	180	0.9	11	1.7	930
8-12	M	1330	27	170	8	6.8	0	30	132	190	1.0	12	2.4	93
9-18	W	1600	22	260	35	5.6	0	10	44	15	1.5	17	3.4	460
Average			25	210	15	5.6 to 6.8	0	19	96	110	1.0	12	2.7	430

Station 40 - Located on Little River near Weeksville to define condition of water 2.3 miles above Albemarle Sound. Drainage Area (sq. mi.) 97

6-21	F	1030	29	44	20	6.9	0	23	160	320	6.2	80	1.1	3.6
7-18	Th	1210	27	31	15	6.6	0	23	248	530	7.3	91	2.5	3.6
8-12	M	1230	27	26	20	7.1	0	31	448	800	7.0	87	1.0	9.1
Average			28	34	20	6.6 to 7.1	0	26	285	550	6.8	86	1.5	5.4

Station 41 - Located on Albemarle Sound at Durants Neck to define quality of Water in sound. Sample taken at mid-depth approximately 1,000 yards from shore.

10-10	Th	1100	19	18	15	6.9	0	34	380	2,200	8.1	88	1.5	43

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 42 - Located on Perquimans River at Belvidere to define salt water intrusion. Drainage Area (sq. mi.) 44

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phen. ppm	Alkalinity Tot. ppm	Acidity Min. ppm	Acidity Tot. ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-25	T	0750	0	26	640	2	6.1	0	22	-	-	56	36	0.2	2	3.8	-	<3.6
7-25	Th	1450	0	28	420	5	5.8	0	11	-	-	164	120	0.5	6	1.8	-	75
8-14	W	1240	0	27	340	8	5.5	-	-	0	60	108	75	0.6	7	1.8	-	930
8-26	M	1330	7	25	260	8	5.7	0	12	-	-	64	55	2.2	26	1.7	80	150
9-13	F	1700	4	25	420	3	5.4	-	-	0	25	38	35	0.2	2	2.5	68	93
9-24	T	0900	24	23	400	8	5.9	0	10	-	-	48	15	0.2	2	2.4	390	230
Average			-	26	420	6	5.4 to 6.1	0	14	-	-	80	56	0.7	8	2.3	-	<250

Station 43 - Located on Perquimans River above Toms Creek receiving untreated sewage from one of Hertford's outfalls and above all pollution from Hertford. Drainage Area (sq. mi.) 93

6-25	T	1335	0	31	180	5	6.9	0	23	-	-	80	110	6.2	83	2.8	-	93
7-25	Th	1420	0	28	120	3	6.5	0	23	-	-	220	200	4.5	57	1.6	-	93
8-14	W	1150	0	28	90	15	6.8	0	30	-	-	105	180	6.3	80	3.0	-	75
8-26	M	1220	14	26	70	10	7.0	0	26	-	-	92	200	7.8	95	2.6	250	230
9-13	F	0905	8	28	90	8	6.6	0	30	-	-	94	140	4.8	61	2.2	120	230
9-24	T	1000	50	26	135	35	6.5	0	28	-	-	94	190	2.9	35	1.3	440	150
Average			-	28	110	15	6.5 to 7.0	0	27	-	-	114	170	5.4	69	2.2	-	150

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 44 - Located on Toms Creek below point of discharge of untreated sewage from Hertford's Perry Street sewer and 150' above Perquimans River.

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-26	W	1110	-	29	160	15	6.7	0	22	60	100	5.2	67	1.8	-	750
7-22	M	1020	-	28	90	3	6.8	0	27	152	150	3.7	47	2.1	-	2,300
8-13	T	0925	-	27	100	15	6.5	0	28	108	130	5.1	63	2.9	-	430
9-19	Th	1545	-	26	130	15	6.1	0	27	108	170	3.6	44	2.6	-	930
Average			-	28	120	10	6.1 to 6.8	0	26	107	140	4.4	55	2.4	-	1,100

Station 45 - Located on Perquimans River below pollution in Toms Creek and untreated sewage from one of Hertford's outfalls above U. S. Hwy. 17 bridge. Average of three points.

Drainage Area (sq. mi.) 94

6-25	T	1310	0	30	140	10	6.5	0	24	81	130	5.3	70	1.6	-	6,600
7-25	Th	1355	0	28	-	-	6.9	0	26	230	210	6.0	76	2.7	-	5,400
8-14	W	1135	0	28	85	20	7.1	0	31	164	200	6.9	87	3.3	-	2,200
8-26	M	1210	14	25	70	25	7.4	0	29	119	200	8.1	96	3.1	290	1,900
9-13	F	0845	8	27	65	11	6.2	0	32	131	220	5.2	64	2.6	140	600
9-24	T	1015	50	26	70	15	6.6	0	31	143	270	5.2	63	2.1	710	1,100
Average			-	27	85	15	6.2 to 7.4	0	29	145	210	6.1	76	2.6	-	3,000

TABLE 6

ANALYTICAL RESULTS

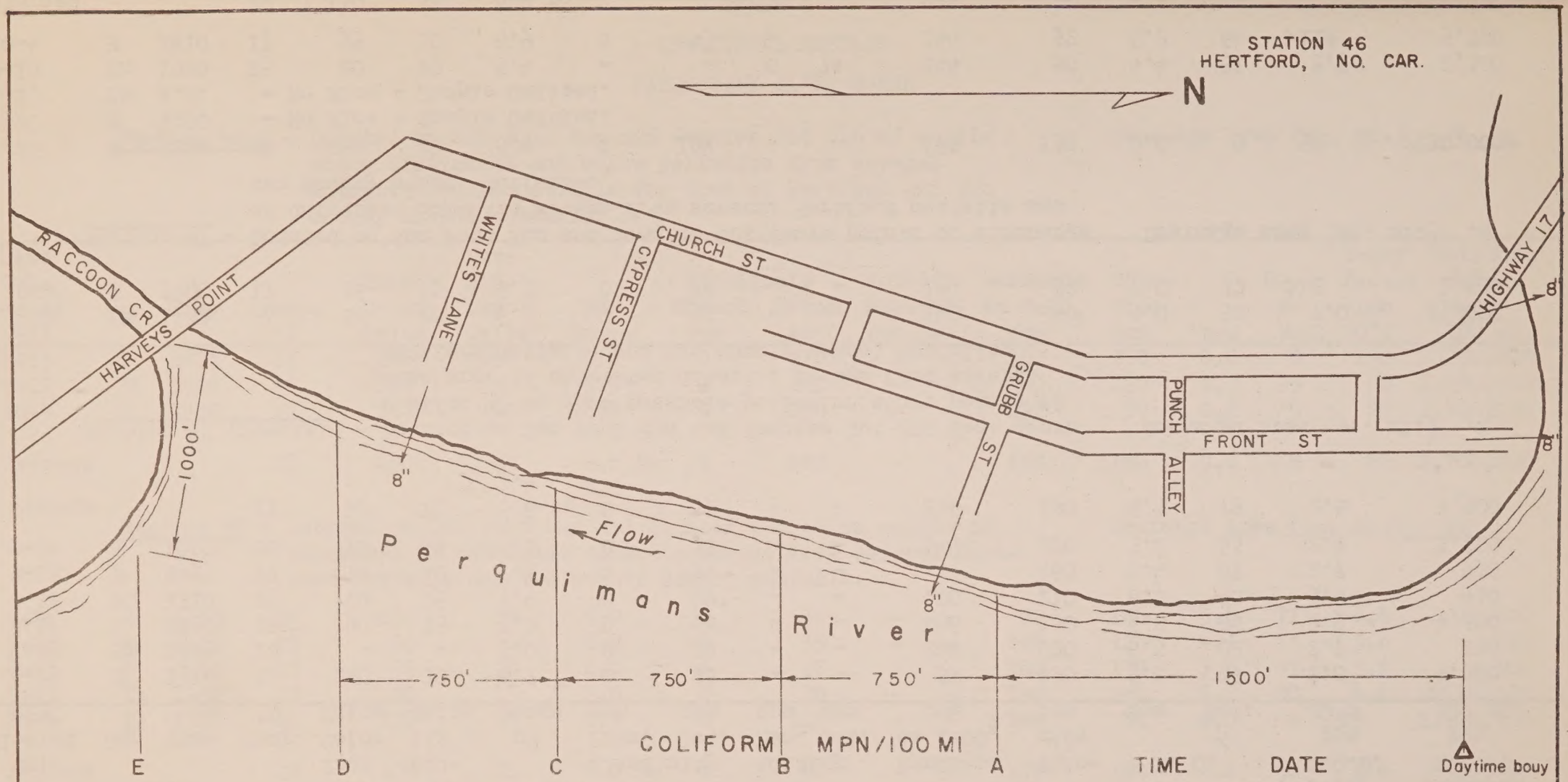
PASQUOTANK RIVER BASIN

Station 45-R - Located on Perquimans River below pollution in Toms Creek and untreated sewage from one of Hertford's outfalls above U. S. Hwy. 17 bridge. Sample taken at right quarter point, looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-25	T	1310	30	130	10	6.4	0	22	80	110	4.7	62	1.5	430
7-25	Th	1355	28	100	6	6.9	0	25	240	190	6.0	76	2.9	15,000
8-14	W	1140	28	90	20	7.1	0	29	176	200	7.0	88	3.5	1,500
8-26	M	1210	25	70	20	7.7	0	29	116	180	8.0	96	2.8	930
9-13	F	0840	27	70	8	6.2	0	32	124	280	5.2	64	2.4	430
9-24	T	1015	26	70	15	6.6	0	32	140	250	5.2	63	2.2	1,500
Average			27	90	15	6.2 to 7.7	0	28	146	200	6.0	75	2.6	3,300

Station 45-M - Located on Perquimans River below pollution in Toms Creek and untreated sewage fromone of Hertford's outfalls above U. S. Hwy. 17 bridge. Sample taken at mid-point.

6-25	T	1310	30	140	10	6.5	0	24	80	130	5.5	72	1.4	15,000
7-25	Th	1355	28	100	6	6.8	0	24	240	230	5.7	72	2.5	930
8-14	W	1135	28	80	20	7.0	0	30	160	210	6.8	86	3.5	930
8-26	M	1210	25	70	25	7.4	0	30	140	210	8.0	95	3.1	4,300
9-13	F	0845	27	50	15	6.1	0	31	144	220	4.9	61	2.7	930
9-24	T	1015	26	70	15	6.6	0	31	144	290	5.1	62	1.9	430
Average			27	85	15	6.1 to 7.4	0	28	151	220	6.0	75	2.5	3,800



E	D	C	B	A	TIME	DATE
COLIFORM MPN/100 ML						
210	230	4,300	23	93	1050	7-22-57
430	230	230	430	93	0930	8-13-57
24,000	4,300	4,300	930	1,500	1400	9-12-57
2,300	4,300	4,300	9,300	930	1200	10-11-57
6,700	2,300	2,300	2,700	650		Average

PERQUIMANS RIVER AT HERTFORD, N. C.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 45-L - Located on Perquimans River below pollution in Toms Creek and untreated sewage from one of Hertford's outfalls above U. S. Hwy. 17 bridge. Sample taken at left quarter point looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phen. ppm	Alkalinity Tot. ppm	Acidity Min. ppm	Acidity Tot. ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-25	T	1310	30	140	10	6.7	0	26	-	-	84	120	5.8	76	1.8	4,300
7-25	Th	1355	28	-	-	7.0	0	28	-	-	208	220	6.5	82	2.7	230
8-14	W	1130	28	90	15	7.2	0	33	-	-	156	180	6.8	86	2.9	4,300
8-26	M	1210	25	70	25	7.4	0	29	-	-	100	210	8.2	98	3.4	430
9-13	F	0855	27	70	10	7.1	0	34	-	-	124	160	5.4	67	2.7	430
9-24	T	1015	26	70	15	6.6	0	31	-	-	144	270	5.2	63	2.2	1,500
Average			27	90	15	6.6 to 7.4	0	30	-	-	136	190	6.3	79	2.6	1,900

Station 47 (Special) - Located on Gum Pond Run and Jennies Gut 200 feet above Station 47 to show possible pollution above points of discharge of untreated domestic sewage from several Hertford outfalls and two county school outfalls. Drainage Area (sq. mi.) .2

9-19	Th	1430	23	60	20	6.2	0	53	-	-	140	40	5.0	58	7.0	23,000
10-4	F	1400	17	16	35	6.5	0	38	-	-	144	32	7.0	72	>12	1,500

Station 47 - Located on Gum Pond Run and Jennies Gut above points of discharge of untreated domestic sewage from several Hertford outfalls and two county school outfalls. Drainage Area (sq. mi.) .2

6-26	W	1220	26	280	80	6.8	0	194	-	-	168	130	0.0	0	56	>110,000#
7-22	M	1130	- No Flow - Sample Omitted.													
8-13	Th	A.M.	- No Flow - Sample Omitted.													
9-19	Th	1950	23	60	20	5.4	-	-	0	74	144	50	4.4	51	5.5	2,300
10-4	F	1410	17	39	10	6.9	0	43	-	-	144	32	6.2	64	>11#	9,300
Average			22	130	35	5.4 to	-	-	-	-	152	71	3.5	38	-	-

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 48-A - Located on Gum Pond Run and Jennies Gut 0.6 of a mile above Station 48 and below pollution from several domestic sewage outfalls for Town of Hertford and two county school outfalls. Drainage Area (sq. mi.) .25

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Acidity Min. ppm	Acidity Tot. ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.C.D. ppm 20°C	Coliform M.P.N. per 100 ml.
8-13	T	1015	27	240	190	6.6	0	270	-	-	192	230	0.0	0	190	230,000
9-12	Th	1500	26	180	30	6.5	0	141	-	-	180	220	1.9	23	38	2,400,000
10-4	F	1430	17	160	40	6.8	0	138	-	-	192	94	0.0	0	29	2,400,000
Average			23	190	85	6.5 to 6.8	0	183	-	-	188	180	0.6	8	86	1,700,000

Station 48 - Located on Gum Pond Run and Jennies Gut below points of discharge of untreated domestic sewage from several Hertford outfalls and two county school outfalls. Drainage Area (sq. mi.) .3

6-26	W	1130	29	130	15	6.8	0	30	-	-	72	100	5.5	71	4.4	24,000
7-22	M	1110	29	90	10	6.9	0	35	-	-	164	120	4.1	53	3.6	930
8-13	T	0935	27	85	20	6.0	0	28	-	-	100	150	3.8	47	2.8	2,300
9-12	Th	1450	27	80	15	7.0	0	38	-	-	140	260	7.6	80	4.4	>110,000
10-4	F	1300	18	130	45	6.7	0	118	-	-	184	96	0.0	0	17	2,400,000
Average			26	100	20	6.0 to 7.0	0	50	-	-	132	150	4.2	50	6.4	>510,000

Station 49 - Located on Raccoon Creek near Hertford above pollution in Jennies Gut and Gum Pond Run. Drainage Area (sq. mi.) 5.7

6-26	W	1335	27	130	5	6.8	0	29	-	-	68	100	2.7	33	1.6	750
7-22	M	1150	28	80	5	6.6	0	32	-	-	168	170	3.4	43	2.6	430
8-13	T	1115	27	85	20	6.0	0	35	-	-	116	160	2.0	25	3.0	930
9-12	Th	1520	26	130	6	3.5	-	-	-	1,220	116	190	2.9	35	2.8	1,500
Average			27	110	9	3.5 to 6.8	0	32	-	-	117	160	2.8	34	2.5	900

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 50 - Located on Raccoon Creek below Gum Pond Run and Jennies Gut receiving untreated domestic sewage from several Hertford outfalls and two county school outfalls. Drainage Area (sq. mi.) 6.8

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-26	W	1240	-	29	120	15	8.1	0	35	62	100	5.6	72	1.5	-	24,000
7-22	M	1220	-	29	55	3	7.8	0	30	140	130	8.2	105	4.2	-	230
8-13	T	1130	-	27	80	30	6.2	0	27	112	180	4.2	52	2.9	-	230
9-12	Th	1600	-	28	80	15	6.2	0	33	140	270	8.1	102	6.4	-	9,300
Average			-	28	85	15	6.2 to 8.1	0	31	114	170	6.5	83	3.8	-	8,400

Station 51 - Located on Perquimans River below all pollution from Hertford. Average of three points. Drainage Area (sq. mi.) 130

6-25	T	1240	0	30	110	15	7.0	0	24	69	130	6.8	89	1.5	-	20
7-25	Th	1330	0	28	75	9	8.2	0	28	241	260	7.6	96	2.7	-	<6.7
8-14	W	1120	0	27	70	25	7.3	0	29	181	180	7.3	90	2.7	-	140
8-26	M	1150	20	25	65	25	7.8	0	29	139	230	8.1	97	3.0	410	230
9-13	F	0835	11	27	55	15	7.9	0	35	168	360	7.0	87	2.5	190	72
9-24	T	1040	68	26	45	20	7.4	0	36	211	490	7.0	85	2.2	1,000	300
Average			-	27	70	20	7.0 to 8.2	0	30	168	280	7.3	91	2.4	-	<130

Station 51-R - Located on Perquimans River below all pollution from Hertford. Sample taken at Right Quarter Point looking downstream.

6-25	T	1240	-	30	120	15	7.0	0	26	66	130	6.7	88	1.6	-	43
7-25	Th	1330	-	28	80	10	8.3	0	25	244	190	7.6	96	2.9	-	<3.6
8-14	W	1120	-	27	70	25	7.3	0	26	180	170	7.2	89	2.9	-	230
8-26	M	1150	-	26	65	25	7.9	0	30	176	230	8.1	99	2.9	-	230
9-13	F	0830	-	27	49	15	7.7	0	35	172	300	7.3	90	2.3	-	150
9-24	T	1040	-	26	49	25	7.4	0	39	196	470	6.9	84	2.2	-	230

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 51-M - Located on Perquimans River below all pollution from Hertford. Sample taken at mid point.

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-25	T	7240	-	30	120	20	6.9	0	24	64	130	6.7	88	1.4	-	9.1
7-25	Th	1330	-	28	70	8	8.1	0	30	244	240	7.5	95	2.6	-	7.3
8-14	W	1123	-	27	65	25	7.2	0	30	176	200	7.4	92	2.6	-	93
8-26	M	1150	-	25	65	20	7.8	0	30	132	220	8.2	98	2.9	-	23
9-13	F	0835	-	27	65	10	7.9	0	35	164	370	6.9	85	2.4	-	43
9-24	T	1040	-	26	44	15	7.4	0	34	216	520	7.1	87	2.0	-	430
Average			-	27	70	15	6.9 to 8.1	0	31	166	280	7.3	91	2.3	-	100

Station 51-L - Located on Perquimans River below all pollution from Hertford. Sample taken at left quarter point looking downstream.

6-25	T	1240	-	30	90	15	7.0	0	23	76	130	6.9	91	1.5	-	9.1
7-25	Th	1330	-	28	70	8	8.2	0	28	236	350	7.7	97	2.7	-	9.1
8-14	W	1125	-	27	70	25	7.4	0	31	188	180	7.3	91	2.7	-	93
8-26	M	1150	-	25	65	30	7.4	0	28	108	340	8.1	97	3.3	-	430
9-13	F	0840	-	27	50	15	7.9	0	35	168	400	6.9	85	2.7	-	23
9-24	T	1040	-	26	42	20	7.6	0	35	220	490	7.1	86	2.3	-	230
Average			-	27	65	20	7.0 to 8.2	0	30	166	320	7.3	91	2.5	-	130

Station 52 - Located on Perquimans River 2.5 miles below Station 51 near Hertford Beach to define condition of water above bathing beach. Average of three points. Drainage Area (sq. mi.) 130

6-25	T	1105	0	29	110	15	7.0	0	35	79	110	7.0	90	1.2	-	7.3
7-25	Th	1135	0	28	60	9	8.1	0	30	225	300	7.0	89	2.2	-	<16
8-14	W	1020	0	27	55	30	8.0	0	34	160	300	6.9	85	2.0	-	13
8-26	M	1100	20	25	60	25	7.8	0	33	157	350	8.1	97	2.7	360	10
9-13	F	0810	11	27	39	15	7.6	0	36	223	480	6.5	81	2.6	190	12
9-24	T	1140	70	26	39	20	7.7	0	35	256	640	7.4	91	2.2	1,000	9.1
Average			-	27	60	20	7.0 to 8.1	0	34	183	360	7.2	89	2.2	-	<11

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 52-R - Located on Perquimans River 2.5 miles below Station 51 near Hertford Beach to define condition of water above bathing beach. Sample taken at right quarter point looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-25	T	1105	29	120	20	6.9	0	43	94	110	7.0	90	1.2	9.1
7-25	Th	1135	28	65	10	8.3	0	30	240	230	7.2	91	2.2	23
8-14	W	1025	27	55	15	8.0	0	34	152	280	6.9	85	1.9	23
8-26	M	1100	25	55	25	7.8	0	32	164	320	8.2	98	2.8	15
9-13	F	0800	27	39	15	7.7	0	38	228	500	6.1	76	2.8	3.6
9-24	T	1140	26	44	30	7.7	0	34	220	570	7.5	92	2.3	9.1
Average			27	65	20	6.9 to 8.3	0	35	183	340	7.2	89	2.2	14

Station 52-M - Located on Perquimans River 2.5 miles below Station 51 near Hertford Beach to define condition of water above bathing beach. Sample taken at mid-point.

6-25	T	1105	29	120	15	7.0	0	31	66	110	7.0	90	1.2	9.1
7-25	Th	1135	28	65	10	8.0	0	32	220	420	7.0	88	2.2	<3.6
8-14	W	1020	27	55	45	8.1	0	34	160	300	6.9	86	2.1	9.1
8-26	M	1100	25	50	25	7.8	0	34	160	370	8.1	97	2.7	7.3
9-13	F	0810	27	39	15	7.6	0	36	223	480	6.6	82	2.5	9.1
9-24	T	1140	26	36	10	7.7	0	35	244	700	7.3	90	1.9	9.1
Average			27	60	20	7.0 to 8.1	0	34	179	400	7.2	89	2.1	<7.9

Station 52-L - Located on Perquimans River 2.5 miles below Station 51 near Hertford Beach to define condition of water above bathing beach. Sample taken at left quarter point looking downstream.

6-25	T	1105	29	90	10	7.0	0	31	76	110	7.1	91	1.3	3.6
7-25	Th	1135	28	55	8	8.1	0	30	216	250	6.9	87	2.1	23
8-14	W	1015	27	55	25	8.0	0	34	168	320	6.9	86	2.1	9.1
8-26	M	1100	25	55	20	7.8	0	32	148	360	8.1	97	2.6	9.1
9-13	F	0825	27	39	15	7.5	0	34	212	460	6.8	84	2.5	23
9-24	T	1140	26	36	25	7.7	0	35	304	650	7.3	90	2.5	9.1

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 53 - Located on Perquimans River at Hertford Beach 3.5 miles below Hertford to define condition of water for bathing.

Date Collected 1957	Day	Time	Coliform M.P.N. per 100 ml. "A"	Coliform M.P.N. per 100 ml. "B"	Coliform M.P.N. per 100 ml. "C"	Coliform M.P.N. per 100 ml. "D"	Coliform M.P.N. per 100 ml. "E"
8-28	W	1545	430	430	430	9.1	93
9-5	Th	1035	23	93	230	430	93
10-8	T	1215	9,300	930	930	930	930
Average			3,300	480	530	460	370

Note: Sampling sites located 50 feet apart.

Station 54 - Located on Perquimans River at Southern Shores Beach about 4 miles below Hertford to define condition of water for bathing.

8-28	W	1415	93	9.1	3.6	93	750
9-5	Th	1020	230	43	93	93	430
10-8	T	1235	930	430	4,300	4,300	930
Average			420	160	1,500	1,500	700

Note: Sampling sites located 50 feet apart.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 55 Composited - Located on Perquimans River 4.5 miles below Station 52 to show general river quality. Average of three points. Drainage Area (sq. mi.) 150

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-25	T	1020	0	28	120	20	6.9	0	32	77	120	7.1	90	1.1	-	9.1
7-25	Th	1055	0	27	45	9	8.3	0	31	230	260	6.7	83	1.9	-	<3.6
8-14	W	1000	0	27	45	25	7.9	0	35	227	430	6.9	86	1.9	-	<3.6
8-26	M	1030	23	25	-	-	7.7	0	33	213	490	8.0	95	2.4	370	83
9-13	F	0740	13	27	75	15	7.7	0	30	224	520	6.4	80	2.6	230	17
9-24	T	1215	79	26	38	25	7.9	0	35	287	670	7.9	97	1.8	960	<5.4
Average			-	27	65	20	6.9 to 8.3	0	33	210	420	7.2	89	2.0	-	<20

Station 55-R - Located on Perquimans River 4.5 miles below Station 52 to show general river quality. Sample taken at right quarter point looking downstream.

6-25	T	1020	-	28	130	20	6.7	0	36	80	120	7.0	88	1.2	-	9.1
7-25	Th	1055	-	27	50	10	8.3	0	30	232	200	7.0	87	2.0	-	3.6
8-14	W	0950	-	27	46	30	8.0	0	35	220	430	7.0	87	1.8	-	<3.6
8-26	M	1030	-	25	-	-	7.7	0	32	212	490	8.0	95	2.6	-	230
9-13	F	0745	-	27	36	20	7.7	0	30	220	510	6.3	79	2.7	-	3.6
9-24	T	1215	-	26	42	30	7.9	0	35	232	540	8.0	98	1.9	-	<3.6
Average			-	27	60	20	6.7 to 8.3	0	33	199	380	7.2	89	2.0	-	<42

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 55-M - Located on Perquimans River 4.5 miles below Station 52 to show general river quality. Sample taken at mid-point.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-25	T	1020	28	100	20	6.9	0	33	76	120	7.0	88	1.0	9.1
7-25	Th	1055	27	42	10	8.3	0	31	228	230	6.7	83	1.8	<3.6
8-14	W	1000	27	44	15	7.9	0	34	244	470	7.1	88	1.9	<3.6
8-26	M	1030	25	39	20	8.0	0	34	216	500	8.0	96	2.2	9.1
9-13	F	0740	27	36	15	7.6	0	28	228	530	6.4	80	2.8	23
9-24	T	1215	26	42	30	7.9	0	35	272	630	7.9	97	1.7	3.6
Average			27	50	20	6.9 to 8.3	0	33	211	410	7.2	89	1.9	<8.6

Station 55-L - Located on Perquimans River 4.5 miles below Station 52 to show general river quality. Sample taken at left quarter point looking downstream.

6-25	T	1020	28	120	20	7.0	0	27	76	120	7.2	91	1.2	9.1
7-25	Th	1055	27	44	8	8.2	0	33	232	350	6.3	78	1.8	<3.6
8-14	W	1015	27	46	25	7.6	0	35	216	400	6.8	84	2.1	<3.6
8-26	M	1030	25	42	30	7.5	0	33	212	490	7.9	94	2.4	9.1
9-13	F	0730	27	160	15	7.8	0	31	224	510	6.5	81	2.3	23
9-24	T	1215	26	31	25	7.9	0	35	356	830	7.9	97	1.8	9.1
Average			27	75	20	7.0 to 8.2	0	32	219	450	7.1	88	1.9	<9.6

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 56 - Located on Perquimans River at Camp Perry about 9 miles below Hertford to define condition of water for bathing.

Date Collected 1957	Day	Time	Coliform M. P. N. per 100 ml. "A"	Coliform M.P.N. per 100 ml. "B"	Coliform M.P.N. per 100 ml. "C"	Coliform M.P.N. per 100 ml. "D"
8-15	Th	1050	43	150	75	43
9-23	M	1700	23	93	93	150

Station 57 - Located on Perquimans River at Harveys Neck 1.3 miles above Albemarle Sound. Average of three points. Drainage Area (sq. mi.) 170

Date Collected 1957	Day	Time	Mean Daily Discharge cfs	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	5-Day B.O.D. lbs/day 25°C	Colif. M.P.N. per 100 ml.
6-25	T	0915	0	28	65	15	7.0	0	36	107	170	7.2	91	1.1	-	7.3
7-25	Th	1010	0	26	31	6	8.1	0	30	291	430	6.5	79	1.3	-	<23
8-14	W	0925	0	27	30	25	7.6	0	34	367	730	7.0	87	1.3	-	<3.6
8-26	M	1000	26	24	29	25	7.5	0	36	368	910	8.1	96	1.6	280	47
9-13	F	0655	15	26	26	9	7.7	0	35	365	820	6.7	82	2.1	210	20
9-24	T	1300	92	26	27	20	7.9	0	36	583	1,300	7.8	96	1.5	930	9.1
Average			-	26	35	15	7.0 to 8.1	0	35	347	730	7.2	89	1.5	-	<19

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 57-R - Located on Perquimans River at Harveys Neck 1.3 miles above Albemarle Sound. Sample taken at right quarter point looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-25	T	0915	28	70	15	6.8	0	34	110	150	7.3	92	1.1	9.1
7-25	Th	1010	26	31	5	8.0	0	33	292	460	6.5	79	1.4	43
8-14	W	0915	27	28	10	7.8	0	34	384	750	7.0	87	1.3	3.6
8-26	M	1000	25	24	20	7.8	0	35	364	900	8.2	99	1.5	3.6
9-13	F	0645	26	28	10	7.5	0	35	356	790	6.5	80	2.2	43
9-24	T	1300	26	28	15	8.0	0	36	570	1,100	7.9	97	1.5	9.1
Average			26	35	15	6.8 to 8.0	0	35	346	690	7.2	89	1.5	19

Station 57-M - Located on Perquimans River at Harveys Neck 1.3 miles above Albemarle Sound. Sample taken at mid-point.

6-25	T	0915	28	60	15	7.2	0	36	132	180	7.2	91	1.0	9.1
7-25	Th	1010	26	31	5	8.2	0	29	300	400	6.6	80	1.4	23
8-14	W	1925	27	34	15	7.6	0	34	332	740	6.9	86	1.3	3.6
8-26	M	1000	24	24	25	7.5	0	34	384	930	8.2	97	1.5	43
9-13	F	0655	26	26	8	7.7	0	34	368	830	6.9	85	2.1	9.1
9-24	T	1300	26	28	30	7.9	0	36	570	1,200	7.7	95	1.6	9.1
Average			26	34	15	7.2 to 8.2	0	34	348	720	7.3	89	1.5	16

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 57-L - Located on Perquimans River at Harveys Neck 1.3 miles above Albemarle Sound. Sample taken at left quarter point looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-25	T	0915	28	65	15	7.1	0	37	80	180	7.0	88	1.1	3.6
7-25	Th	1010	27	31	8	8.1	0	30	280	440	6.4	80	1.1	<3.6
8-14	W	0935	27	28	45	7.6	0	35	384	800	7.1	88	1.4	<3.6
8-26	M	1000	24	39	25	7.5	0	34	356	910	8.0	95	1.8	9.3
9-13	F	0705	26	24	10	7.8	0	35	372	840	6.7	82	1.9	9.1
9-24	T	1300	26	24	10	7.9	0	37	610	1,500	7.7	95	1.3	9.1
Average			26	35	20	7.1 to 8.1	0	35	347	780	7.2	88	1.4	<20

Station 58 - Located on Albemarle Sound near Harveys Neck to define quality of water in sound.

7-1	M	1050	29	31	6	7.2	0	30	342	780	7.3	94	1.0	9.1
7-23	T	1005	27	16	8	7.3	0	31	600	1,300	7.5	94	1.2	9.1
8-15	Th	1020	27	21	8	7.1	0	33	560	1,100	6.5	81	1.3	<3.6
Average			28	23	7	7.1 to 7.3	0	31	501	1,100	7.1	90	1.2	<7.2

Station 59 - Located on Yeopim River near Bethel to define condition of water at mouth. Drainage Area (sq. mi.) 46

7-1	M	1335	29	38	10	7.7	0	31	140	230	7.5	96	1.5	23
7-23	T	1125	28	25	9	7.3	0	32	530	1,100	7.6	97	2.2	<5.4
8-15	Th	1135	28	28	20	7.4	0	35	370	810	7.6	97	2.7	9.1
Average			28	30	15	7.3 to 7.7	0	33	347	710	7.6	97	2.1	<13

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 59-R - Located on Yeopim River near Bethel to define condition of water at mouth. Sample taken at right quarter point looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-1	M	1335	28	42	15	7.5	0	29	156	250	7.7	97	2.2	23
7-23	T	1120	28	26	8	7.4	0	32	610	1,100	7.5	96	2.1	<3.6

Station 59-M - Located on Yeopim River near Bethel to define condition of water at mouth. Sample taken at mid-point.

7-1	M	1335	29	36	10	7.8	0	31	136	210	7.4	95	0.9	23
7-23	T	1125	28	24	10	7.1	0	30	550	1,100	7.6	97	2.2	<3.6

Station 59-L - Located on Yeopim River near Bethel to define condition of water at mouth. Sample taken at left quarter point looking downstream. Drainage Area (sq. mi.)_____

7-1	M	1335	29	36	10	7.7	0	34	128	220	7.3	94	1.5	23
7-23	T	1130	28	24	8	7.3	0	35	420	1,200	7.6	97	2.3	9.1

Station 60 - Located on Albemarle Sound at Sandy Point Beach to define quality of water for bathing.

Date Collected 1957	Day	Time	Coliform M.P.N. per 100 ml. "A"	Coliform M.P.N. per 100 ml. "B"
7-1	M	1425	23	93
7-23	T	1305	230	230
8-15	Th	1300	9.1	23
Average			87	120

Note: Sampling sites located 100 feet apart.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 61 - Located on Albemarle Sound at N. C. Hwy. 32 Bridge near St. Johns to define condition of water. Average of three points.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-1	M	1550	28	37	6	7.2	0	30	235	530	7.5	96	0.8	<58
7-23	T	1325	28	21	4	7.0	0	30	510	1,100	7.4	94	1.2	7.3
8-15	Th	1330	28	23	15	7.0	0	35	350	660	7.2	92	1.5	20
9-9	M	1240	27	24	10	7.3	0	41	513	570	7.9	99	2.0	190
Average			28	26	9	7.0 to 7.3	0	34	402	720	7.5	95	1.4	<69

Station 61-R - Located on Albemarle Sound at N. C. Hwy. 32 Bridge near St. Johns to define condition of water in sound. Sample taken at right quarter point. (South end of bridge.)

7-1	M	1550	28	34	5	7.2	0	30	252	550	7.5	96	1.2	23
7-23	T	1335	28	24	3	7.2	0	32	520	1,000	7.6	97	1.1	9.1
8-15	Th	1330	28	18	15	7.0	0	35	340	700	7.2	92	1.5	9.1
9-9	M	1230	27	24	10	7.3	0	41	590	700	7.9	98	2.1	430
Average			28	25	8	7.0 to 7.3	0	35	426	740	7.6	96	1.5	120

Station 61-M - Located on Albemarle Sound at N. C. Hwy. 32 Bridge near St. Johns to define condition of water on sound. Sample taken at mid-point of bridge.

7-1	M	1550	28	42	8	7.2	0	31	226	520	7.6	96	0.6	93
7-28	T	1325	28	18	5	6.8	0	30	500	1,100	7.3	93	1.3	3.6
8-15	Th	1330	28	28	10	7.0	0	34	330	660	7.2	92	1.6	9.1
9-9	M	1240	28	24	15	7.2	0	40	450	450	8.0	101	1.9	43
Average			28	28	10	6.8 to 7.2	0	34	377	680	7.5	96	1.4	37

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 61-L - Located on Albemarle Sound at N. C. Hwy. 32 Bridge near St. Johns to define condition of water in sound. Sample taken at left quarter point. (North end of bridge.)

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-1	M	1550	28	34	6	7.1	0	30	228	520	7.4	94	0.7	<3.6
7-23	T	1315	28	21	3	7.1	0	28	510	1,200	7.3	93	1.2	9.1
8-15	Th	1330	27	24	15	6.9	0	35	390	630	7.3	91	1.5	43
9-9	M	1250	27	24	8	7.4	0	42	400	550	7.8	97	1.9	93
Average			28	26	8	6.9 to 7.4	0	34	382	730	7.5	94	1.3	<37

Station 62 - Located on Albemarle Sound near point of discharge of effluent from the U. S. Navy Auxiliary Air Station sewage treatment plant. Average of three points.

7-1	M	1750	27	39	10	7.3	0	32	193	410	7.6	94	1.9	100
7-23	T	1520	30	25	7	7.5	0	38	380	430	7.3	96	1.8	87
9-3	T	1305	27	19	10	7.8	0	40	250	930	8.4	105	1.7	250
Average			28	28	9	7.3 to 7.8	0	37	274	590	7.8	98	1.8	150

Station 62-A - Located on Albemarle Sound near point of discharge of effluent from the U. S. Navy Auxiliary Air Station sewage treatment plant. Sample taken 200 ft. west of outfall.

7-1	M	1750	27	39	10	7.2	0	33	192	420	7.6	94	1.8	23
7-23	T	1535	30	24	8	7.6	0	40	380	450	7.3	96	1.6	23
9-3	T	1300	27	16	10	8.0	0	40	250	1,000	8.3	104	1.7	93
Average			28	26	9	7.2 to 8.0	0	38	274	620	7.7	98	1.7	46

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 62-B - Located on Albemarle Sound near point of discharge of effluent from the U. S. Navy Auxiliary Air Station sewage treatment plant. Sample taken 200 ft. south of outfall.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-1	M	1750	27	39	10	7.5	0	34	204	390	7.4	92	1.9	240
7-23	T	1520	30	24	6	7.4	0	35	320	350	7.4	97	1.5	9.1
9-3	T	1305	27	24	10	7.6	0	39	250	900	8.5	106	1.5	230
Average			28	29	9	7.4 to 7.6	0	36	258	550	7.8	98	1.6	160

Station 62-C Located on Albemarle Sound near point of discharge of effluent from the U. S. Navy Auxiliary Air Station sewage treatment plant. Sample taken 200 ft. east of outfall.

7-1	M	1750	27	39	10	7.3	0	29	184	410	7.7	95	1.9	43
7-23	T	1500	30	26	6	7.5	0	38	450	500	7.2	95	2.4	230
9-3	T	1310	27	16	10	7.8	0	40	250	900	8.5	105	1.8	430
Average			28	27	9	7.3 to 7.8	0	36	295	600	7.8	98	2.0	230

Station 63 - Located on Albemarle Sound at Albemarle Beach near village of Mackeys.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phen. ppm	Alkalinity Tot. ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 m. "A"	Coliform M.P.N. per 100 ml "B"	Coliform M.P.N. per 100 ml. "C"
7-2	T	1115	28	36	20	7.5	0	31	232	400	7.7	97	2.3	9.1	93	9.1
7-24	W	1120	27	24	15	7.4	0	36	280	660	7.0	88	1.7	230	93	43
8-16	F	0830	27	24	25	6.9	0	35	200	400	6.7	83	1.2	43	93	430
9-9	M	1400	26	26	6	6.9	0	41	242	440	7.7	94	2.5	43	23	150
Average			27	28	15	6.9 to 7.5	0	36	239	480	7.3	91	1.9	81	76	160

Note: 63-A - Sample located at eastern most pier. Chemical sample taken at this point.
63-B - Sample located at center pier.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 64 - Located on Kendrick Creek below points of discharge of raw sewage from 10 private outfalls and one school outfall at Roper. Drainage Area (sq. mi.) 12

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-2	T	1330	26	620	25	6.5	0	55	142	24	0.3	4	2.2	9,300
7-24	W	1215	25	640	45	6.5	0	67	94	22	0.7	8	2.2	15,000
8-16	F	1000	26	320	70	6.4	0	50	84	12	0.9	11	5.4	9,300
9-9	M	1505	26	480	15	7.8	0	72	108	15	1.0	12	2.1	43,000
9-17	T	1500	25	340	20	6.9	0	78	152	40	0.5	6	2.8	930
9-23	M	1045	24	240	15	6.0	0	76	108	19	0.3	4	2.0	4,300
Average			25	440	30	6.0 to 7.8	0	67	115	22	0.6	8	2.8	14,000
Station 65 - Located on Kendrick Creek above fish houses at village of Mackeys.														
7-2	T	1205	27	260	8	6.5	0	40	130	140	0.3	4	1.9	230
7-24	W	1135	28	70	5	6.4	0	38	222	460	4.4	56	1.9	230
8-16	F	0815	27	44	25	6.0	0	24	226	520	3.0	38	1.7	4,300
9-9	M	1430	26	140	6	6.2	0	37	248	310	4.0	49	3.2	430
9-17	T	1520	26	60	15	6.5	0	45	300	640	3.2	39	3.3	9.1
Average			27	110	10	6.0 to 6.5	0	37	225	410	3.0	37	2.4	1,000
Station 66 - Located on Kendrick Creek below fish houses at village of Mackeys.														
7-2	T	1230	27	210	15	6.3	0	31	158	230	0.3	4	2.2	43
7-24	W	1150	27	34	10	6.6	0	35	262	530	5.7	71	1.5	230
8-16	F	0910	27	28	20	5.9	0	22	252	510	6.0	75	1.3	430
9-9	M	1150	27	60	10	6.5	0	39	300	350	6.9	85	4.0	43
9-17	T	1545	27	24	35	6.8	0	43	294	650	6.2	78	3.3	3.6
Average			27	70	20	5.9 to 6.8	0	34	253	450	5.0	63	2.5	150

Note - Fish house not in operation at time of sampling.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 67 - Located on Lake Phelps to define condition of water at Pettigrew State Park

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-8	M	1100	30	24	20	6.8	0	13	36	16	7.2	94	1.0	15
7-24	W	1345	28	26	35	6.3	0	13	41	14	6.7	85	1.9	23
9-17	T	1215	30	24	30	6.7	0	17	45	13	8.1	106	1.6	<3.6
Average			29	25	30	6.3 to 6.8	0	14	41	14	7.3	95	1.5	<14

Station 67-A - Located on unnamed canal at U. S. Hwy. #64 above all sources of pollution in Creswell area.

9-23	M	1300	24	160	30	5.7	0	245	272	39	3.0	35	6.0	46,000
10-3	Th	0845	20	180	45	6.5	0	24	60	7	5.3	58	2.6	4,300

Station 68 - Located on unnamed canal above point of discharge of effluent from Creswell High School septic tank.

7-3	W	1430	26	210	200	7.4	0	92	136	52	7.9	96	>6.8#	150
7-24	W	1424	27	100	20	6.5	0	50	120	36	4.0	50	>5.3#	46,000
9-3	T	1110	28	210	170	7.1	0	30	46	20	0.3	4	4.8	230
9-17	T	1250	27	180	40	6.9	0	132	140	25	4.3	53	6.8	430
9-23	M	1315	24	240	120	6.0	0	92	160	18	0.5	6	12	4,300
10-3	Th	0915	20	170	30	6.1	0	28	84	9	2.5	27	2.8	430
Average			25	190	95	6.0 to 7.4	0	71	114	27	3.3	39	6.7	8,600

#Excluded from average - indeterminate.

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 69 - Located on unnamed canal below point of discharge of effluent from Creswell High School septic tank.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-3	W	1445	27	240	200	7.9	0	52	102	30	7.5	93	>6.6#	1,100
7-24	W	1410	26	160	40	6.9	0	49	104	30	4.5	55	11	930
9-3	T	1100	28	260	100	7.2	0	46	60	30	1.3	16	7.4	2,300
9-17	T	1310	27	260	110	7.0	0	58	106	18	0.9	11	7.5	43
9-23	M	1330	25	180	50	5.9	0	56	144	20	1.6	19	5.2	4,300
10-3	Th	0900	20	130	28	6.1	0	25	64	8	3.1	34	2.2	430
Average			26	210	90	5.9 to 7.9	0	48	97	23	3.2	38	7.0	1,500

#Excluded from average - indeterminate.

Station 70 - Located on Scuppernong River below all pollution from Creswell and to define salt water intrusion. Drainage Araa (sq. mi.) 120

7-3	W	1350	28	220	15	6.0	0	26	84	28	0.0	0	4.5	3.6
7-24	W	1450	27	90	10	5.9	0	22	200	410	0.4	5	1.1	150
9-3	T	1140	26	130	10	6.4	0	14	142	350	0.8	10	3.0	23
Average			27	150	10	5.9 to 6.4	0	21	142	260	0.4	5	2.9	59

Station 71 - Located on Scuppernong River above points of discharge of untreated sewage from Town of Columbia outfall and private outfalls. Average of three points. Drainage Area (sq. mi.) 180

7-3	W	1230	30	150	5	6.5	0	23	105	180	4.4	58	2.0	110
7-30	T	1345	29	70	15	6.7	0	23	311	560	6.2	80	1.5	210
8-29	Th	0915	27	110	9	6.1	0	17	233	540	7.0	87	3.0	99
Average			29	110	10	6.1 to 6.7	0	21	216	430	5.9	75	2.2	140

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 71-R - Located on Scuppernong River above points of discharge of untreated sewage from Town of Columbia outfall and private outfalls. Sample taken at right quarter point looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-3	W	1230	30	130	5	6.3	0	21	104	180	4.5	59	2.0	75
7-30	T	1345	29	70	10	6.8	0	25	320	600	6.2	81	1.2	93
8-29	W	0915	27	140	10	6.0	0	18	224	530	7.0	87	3.0	43
Average			29	110	8	6.0 to 6.8	0	21	216	440	5.9	76	2.1	70

Station 71-M - Located on Scuppernong River above points of discharge of untreated sewage from Town of Columbia outfall and private outfalls. Sample taken at mid-point.

7-3	W	1230	30	160	5	6.8	0	25	104	190	4.4	58	2.1	39
7-30	T	1345	29	70	15	6.7	0	23	292	520	6.1	79	1.6	430
8-29	Th	0915	27	100	10	6.1	0	19	236	540	7.0	87	2.9	210
Average			29	110	10	6.1 to 6.8	0	22	211	420	5.8	75	2.2	230

Station 71-L - Located on Scuppernong River above points of discharge of untreated sewage from Town of Columbia outfall and private outfalls. Sample taken at left quarter point, looking downstream.

7-3	W	1230	30	160	5	6.5	0	23	106					
7-30	T	1345	29	70	15	6.6	0	22	320	180	4.3	56	1.8	230
8-29	Th	0915	27	100	8	6.1	0	15	240	550	6.3	82	1.7	93
										550	6.9	86	3.2	43
Average			29	110	9	6.1 to 6.6	0	20	222	430	5.8	75	2.2	120

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 72 - Located on unnamed canal to define condition of water in canal 500 ft. below Columbia sewage force main crossing.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-3	W	1150	29	120	3	6.4	0	23	116	220	5.4	70	2.5	2,300
7-30	T	1420	29	46	15	6.8	0	28	332	680	6.2	81	2.9	24,000
8-29	Th	0900	27	100	6	6.0	0	21	272	570	6.0	75	3.4	9,300
Average			28	90	8	6.6 to 6.8	0	24	240	490	5.9	75	2.9	12,000

Station 73 - Located on Scuppernong River below points of discharge of untreated sewage from Town of Columbia outfall and private outfalls. Average of three points. Drainage Area (sq. mi.) 190

7-3	W	1200	29	100	5	6.5	0	24	150	260	5.1	66	1.9	1,700
7-30	T	1400	30	55	15	6.8	0	27	384	760	6.2	82	1.5	7,600
8-29	Th	1010	27	65	7	6.2	0	20	268	620	6.2	78	2.8	763
Average			29	75	9	6.2 to 6.8	0	24	267	550	5.8	75	2.1	3,400

Station 73-R - Located on Scuppernong River below points of discharge of untreated sewage from Town of Columbia's outfall and private outfalls. Sample taken at right quarter point looking downstream.

7-3	W	1200	29	80	6	6.4	0	21	158	260	5.3	68	2.1	430
7-30	T	1400	30	55	15	6.8	0	26	400	740	6.2	82	1.4	4,300
8-29	Th	1010	27	90	6	6.2	0	20	264	620	6.3	79	3.4	930
Average			29	75	9	6.2 to 6.8	0	22	274	540	5.9	76	2.3	1,900

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 73-M - Located on Scuppernong River below points of discharge of untreated sewage from one Town of Columbia outfall and five private outfalls. Sample taken at mid-point.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-3	W	1200	29	120	5	6.6	0	27	144	260	5.0	64	1.8	4,300
7-30	T	1400	30	55	15	7.0	0	27	380	780	6.3	83	1.5	9,300
8-29	Th	1010	26	90	5	6.4	0	23	260	620	6.2	76	2.5	430
Average			28	90	8	6.4 to 7.0	0	26	261	550	5.8	74	1.9	4,700

Station 73-L - Located on Scuppernong River below points of discharge of untreated sewage from Town of Columbia outfall and private outfalls. Sample taken at left quarter point looking downstream.

7-3	W	1200	29	100	5	6.5	0	23	148	270	4.9	63	1.8	430
7-30	T	1400	30	55	15	6.7	0	27	372	770	6.2	82	1.6	9,300
8-29	Th	1010	27	18	10	6.0	0	18	280	620	6.2	78	2.5	930
Average			29	60	10	6.0 to 6.7	0	23	267	550	5.8	74	2.0	3,600

Station 74 - Located on Scuppernong River to define condition of water at River Neck about 0.8 of a mile above mouth. Average of three points. Drainage Area (sq. mi.) 200

7-3	W	1045	27	46	7	6.7	0	30	282	660	7.5	94	1.0	<3.6
7-30	T	1105	28	40	10	7.0	0	30	448	960	6.8	87	1.2	120
8-29	Th	1330	27	44	10	7.1	0	28	464	1,200	8.4	105	2.0	11
Average			27	43	9	6.7 to 7.1	0	29	398	940	7.6	95	1.4	<45

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 74-R - Located on Scuppernong River to define condition of water at River Neck about 0.8 of a mile above mouth. Sample taken at right quarter point looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-3	W	1045	27	50	6	6.7	0	24	280	600	7.5	94	1.0	3.6
7-30	T	1105	28	44	15	7.0	0	28	432	880	6.6	84	1.4	230
8-29	Th	1330	26	44	8	7.1	0	27	460	1,200	8.4	103	2.1	7.3
Average			27	46	10	6.7 to 7.1	0	26	391	890	7.5	94	1.5	80

Station 74-M - Located on Scuppernong River to define condition of water at River Neck about 0.8 of a mile above mouth. Sample taken at mid-point.

7-3	W	1045	27	49	6	6.5	0	31	270	670	7.5	94	0.8	<3.6
7-30	T	1105	28	36	10	6.9	0	30	472	1,000	6.4	82	1.1	23
8-29	Th	1330	27	46	15	7.3	0	30	468	1,200	8.4	105	2.0	3.6
Average			27	44	10	6.5 to 7.3	0	30	403	960	7.4	94	1.3	<10

Station 74-L - Located on Scuppernong River to define condition of water at River Neck about 0.8 of a mile above mouth. Sample taken at left quarter point looking downstream.

7-3	W	1045	28	39	10	6.9	0	35	296	700	7.4	94	1.1	<3.6
7-30	T	1105	28	39	10	7.1	0	32	440	1,000	6.4	82	1.2	93
8-29	Th	1330	27	42	10	6.9	0	27	464	1,200	8.4	105	1.9	23
Average			28	40	10	6.9 to 7.1	0	31	400	920	7.4	94	1.4	<40

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 75 - Located on Albemarle Sound to define condition of water for swimming at American Legion Beach at River Neck.

Date Collected 1957	Day	Time	Coliform M.P.N. per 100 ml. "A"	Coliform M.P.N. per 100 ml. "B"	Coliform M.P.N. per 100 ml. "C"	Coliform M.P.N. per 100 ml. "D"	Coliform M.P.N. per 100 ml. "E"
7-8	M	-	23	93	43	93	43
7-30	T	-	43	230	43	43	75
8-29	Th	1300	3.6	3.6	9.1	<3.6	43
Average			23	110	32	<47	54

Station 76 - Located on Albemarle Sound near Dewey Pier to define condition of water in sound.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-8	M	1250	29	26	3	7.1	0	28	410	1,000	7.6	98	1.1	<3.6
7-30	T	1215	28	24	10	7.4	0	30	750	2,600	6.9	90	1.4	93
10-7	M	1430	19	21	10	6.5	0	34	960	2,400	9.0	98	1.8	930
Average			25	24	8	6.5 to 7.4	0	31	707	2,000	7.8	95	1.4	<340

Station 77 - Located on Albemarle Sound near Goat Neck to define condition of water in sound.

7-8	M	1340	29	28	5	7.2	0	29	716	1,100	7.5	98	1.1	3.6
7-31	W	0900	28	28	8	7.2	0	34	670	2,000	6.7	86	1.4	3.6
10-7	M	1515	20	31	6	7.1	0	36	970	2,600	8.7	98	1.4	9.1
Average			26	29	6	7.1 to 7.2	0	33	785	1,900	7.6	94	1.3	5.4

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 78 - Located on Alligator River about 4.0 miles above Albemarle Sound to define condition of water in Alligator River. Average of three points.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-8	M	1500	29	75	5	6.9	0	21	426	1,100	7.4	96	1.1	<3.6
7-31	W	0950	28	42	15	6.7	0	27	593	1,400	6.4	82	1.2	<3.6
8-22	Th	1635	24	50	30	7.3	0	28	700	1,400	7.7	91	1.0	<3.6
Average			27	55	15	6.7 to 7.3	0	25	573	1,300	7.2	90	1.1	<3.6

Station 78-R - Located on Alligator River about 4.0 miles above Albemarle Sound to define condition of water in Alligator River. Sample taken at right quarter point looking downstream.

7-8	M	1500	29	70	5	7.0	0	22	438	1,100	7.4	96	0.9	3.6
7-31	T	0950	29	45	15	6.8	0	26	610	1,400	6.2	81	1.4	<3.6
8-22	Th	1635	24	44	30	7.5	0	30	690	1,300	7.8	92	1.1	<3.6
Average			27	55	15	6.8 to 7.5	0	26	579	1,300	7.1	90	1.1	<3.6

Station 78-M - Located on Alligator River about 4.0 miles above Albemarle Sound to define condition of water in Alligator River. Sample taken at mid-point.

7-8	M	1500	29	80	5	6.9	0	20	426	1,000	7.3	95	1.1	<3.6
7-31	W	0950	28	46	20	6.7	0	28	570	1,400	6.4	82	1.2	<3.6
8-22	Th	1635	24	49	30	7.3	0	28	700	1,400	7.7	91	0.8	3.6
Average			27	58	20	6.7 to 7.3	0	25	549	1,300	7.1	89	1.0	<3.6

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 78-L - Located on Alligator River about 4.0 miles above Albemarle Sound to define condition of water in Alligator River. Sample taken at left quarter point looking downstream.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-8	M	1500	30	70	5	6.9	0	21	414	1,100	7.5	99	1.2	<3.6
7-31	W	0950	28	55	15	6.5	0	26	600	1,300	6.5	83	1.1	<3.6
8-22	Th	1635	24	60	30	7.3	0	25	730	1,500	7.6	90	1.0	<3.6
Average			27	60	15	6.5 to 7.3	0	24	581	1,300	7.2	91	1.1	<3.6

Station 79 - Located on Albemarle Sound near Mashoes to define condition of water in sound.

10-8	T	1200	19	16	10	8.0	0	45	3,200	3,000	8.8	97	1.3	43

Station 80 - Located on unnamed canal to Croatan Sound below fish houses in Manns Harbor to define condition of water entering sound.

7-8	M	1630	30	31	3	7.1	0	42	1,470	2,500	6.4	86	3.7	4,300
7-31	W	1400	32	16	15	6.7	0	51	2,540	6,200	5.9	86	2.5	430
8-22	Th	1115	26	36	35	7.1	0	45	1,210	2,900	6.0	75	2.7	2,300
Average			29	28	20	6.7 to 7.1	0	46	1,740	3,900	6.1	82	3.0	2,300

Station 81 - Located on Croatan Sound at U. S. Hwy. 64 and 264 bridge to define condition of water in sound at Manteo. Average of three points.

7-9	T	1315	29	25	6	7.8	0	49	1,950	6,000	6.7	92	1.3	<34
7-31	W	1420	31	22	10	6.6	0	47	2,720	6,900	6.6	95	1.8	25
8-22	Th	1030	24	23	25	7.8	0	45	1,500	3,200	8.0	96	1.9	<3.6
Average			28	23	15	6.6 to 7.8	0	47	2,057	5,400	7.1	94	1.7	<21

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 81-R - Located on Croatan Sound at U. S. Hwy. 64 and 264 bridge to define condition of water in sound at Manteo. Sample taken at right quarter point west end of bridge.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-9	T	1315	29	26	6	7.8	0	46	1,880	6,100	6.6	90	1.6	<3.6
7-31	W	1420	31	24	10	6.6	0	45	2,080	4,800	6.6	93	1.8	43
8-22	Th	1030	25	24	30	7.8	0	44	1,440	3,000	7.9	97	1.8	<3.6
Average			28	25	15	6.6 to 7.8	0	45	1,800	4,600	7.0	93	1.7	<17

Station 81-M - Located on Croatan Sound at U. S. Hwy. 64 and 264 bridge to define condition of water in sound at Manteo. Sample taken at center of bridge.

7-9	T	1315	29	26	6	7.7	0	50	1,900	5,900	7.0	96	1.3	93
7-31	W	1420	31	24	15	6.5	0	45	2,600	6,800	6.5	94	1.8	9.1
8-22	Th	1030	24	24	20	7.9	0	45	1,600	3,200	8.0	97	2.0	<3.6
Average			28	25	15	6.5 to 7.9	0	47	2,030	5,300	7.2	96	1.7	<35

Station 81-L - Located on Croatan Sound at U.S. Hwy. 64 and 264 bridge to define condition of water in sound at Manteo. Sample taken at left quarter point. (East end of bridge)

7-9	T	1315	29	24	6	7.9	0	50	2,060	6,000	6.7	92	1.1	9.1
7-31	W	1420	31	18	10	6.6	0	50	3,480	9,200	6.8	100	1.8	23
8-22	Th	1030	24	21	25	7.7	0	45	1,460	3,300	8.0	97	1.8	3.6
Average			28	21	15	6.6 to 7.9	0	48	2,330	6,200	7.2	96	1.6	12

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 82 - Located at mouth of Stumpy Point Bay to define condition of water below fish houses at Stumpy Point. Average of three points.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. ppm	O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-31	W	1220	29	20	15	6.9	0	67	3,630	9,500	5.7	81	1.7	<3.6
8-22	Th	1500	23	48	75	7.5	0	65	3,340	8,300	7.2	90	2.5	330
10-11	F	1700	20	32	15	6.8	0	67	8,900	11,000	7.5	91	1.8	150
Average			24	33	35	6.8 to 7.5	0	68	5,290	9,600	6.8	87	2.0	<160

Station 82-R - Located at mouth of Stumpy Point Bay to define condition of water below fish houses at Stumpy Point. Sample taken at right quarter point. (West side of bay)

7-31	W	1220	29	18	20	7.0	0	65	3,680	8,200	5.8	81	1.7	<3.6
8-22	Th	1500	23	39	55	7.6	0	68	3,500	8,400	7.2	90	2.0	930
10-11	F	1700	20	26	8	6.7	0	67	8,500	11,000	7.8	95	1.8	23
Average			24	28	30	6.7 to 7.6	0	67	5,230	9,200	6.9	89	1.8	<320

Station 82-M - Located at mouth of Stumpy Point Bay to define condition of water below fish houses at Stumpy Point. Sample taken at mid-point.

7-9	T	1130	31	42	10	7.7	0	75	2,980	10,000	6.3	94	1.5	3.6
7-31	W	1220	29	18	10	6.9	0	67	3,540	11,000	5.9	85	1.8	<3.6
8-22	Th	1500	23	36	120	7.5	0	66	3,480	8,500	7.2	91	2.0	23
10-11	F	1700	20	16	15	6.8	0	66	8,700	11,000	7.6	93	2.0	3.6
Average			26	28	40	6.8 to 7.7	0	69	4,680	10,000	6.8	91	1.8	<8.5

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 82-L - Located at mouth of Stumpy Point Bay to define condition of water below fish houses at Stumpy Point. Sample taken at left quarter point (east side of bay).

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-31	W	1220	29	24	15	6.9	0	70	3,680	9,300	5.5	78	1.7	<3.6
8-22	Th	1500	23	70	45	7.2	0	61	3,040	7,900	7.2	90	3.4	43
10-11	F	1700	20	55	20	6.9	0	69	9,400	10,000	7.2	87	1.5	430
Average			24	50	25	6.9 to 7.2	0	67	5,370	9,100	6.6	85	2.2	<160

Station 83 - Located in outlet of Small Bay to Oyster Creek in vicinity of several fish houses at Wanchese, N. C.

7-12	F	0930	28	21	5	7.5	0	52	2,100	6,100	6.5	87	1.5	7.3
8-27	T	1115	28	16	10	7.4	0	77	3,900	10,000	7.3	102	1.7	3.6

Station 84 - Located on Croatan Sound to define quality of water for swimming at Roanoke Island Camps, Inc., near Manteo.

Date Collected 1957	Day	Time	Coliform M.P.N. per 100 ml. "A"	Coliform M.P.N. per 100 ml. "B"	Coliform M.P.N. per 100 ml. "C"
7-9	T	1510	<3.6	43	<3.6
8-1	Th	1030	23	9.1	3.6
8-27	T	1200	23	9.1	43
Average			<17	20	<17

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 85 - Located on Roanoke Sound at Fort Raleigh in vicinity of points of discharge of untreated sewage from two outfalls at Seaside Theater. Average of three points.

Date Collected 1957	Day	Time.	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-9	T	1430	30	-	-	7.9	0	51	2,050	5,900	6.6	92	2.0	85
8-1	Th	1010	29	22	10	7.3	0	55	2,610	6,600	6.3	87	1.6	<3.6
8-27	T	1230	27	17	20	7.6	0	57	2,400	5,700	8.2	108	1.8	60
Average			29	-	-	7.3 to 7.9	0	54	2,350	6,100	7.0	96	1.8	<50

Station 85-A - Located on Roanoke Sound at Fort Raleigh in vicinity of points of discharge of untreated sewage from two outfalls at Seaside Theater. Sample taken 50 ft. from shore and 200 ft. west of center of stage.

7-9	T	1430	30	-	-	7.9	0	49	1,960	6,000	6.6	92	1.7	15
8-1	Th	1010	29	21	15	7.2	0	55	2,720	6,300	6.3	86	1.3	3.6
8-27	T	1230	27	18	15	7.6	0	60	2,400	5,900	8.1	107	1.7	43
Average			29	-	-	7.2 to 7.9	0	55	2,360	6,100	7.0	95	1.6	21

Station 85-B - Located on Roanoke Sound at Fort Raleigh in vicinity of points of discharge of untreated sewage from two outfalls at Seaside Theater. Sample taken 200 ft. from shore opposite center of stage.

7-9	T	1430	30	-	-	7.8	0	54	2,100	6,000	6.4	89	2.5	9.1
8-1	Th	1010	29	26	10	7.3	0	55	2,520	7,000	6.3	87	2.0	<3.6
8-27	T	1230	27	16	15	7.6	0	57	2,400	5,400	8.3	108	1.9	93
Average			29	-	-	7.3 to 7.8	0	55	2,340	6,100	7.0	95	2.1	<35

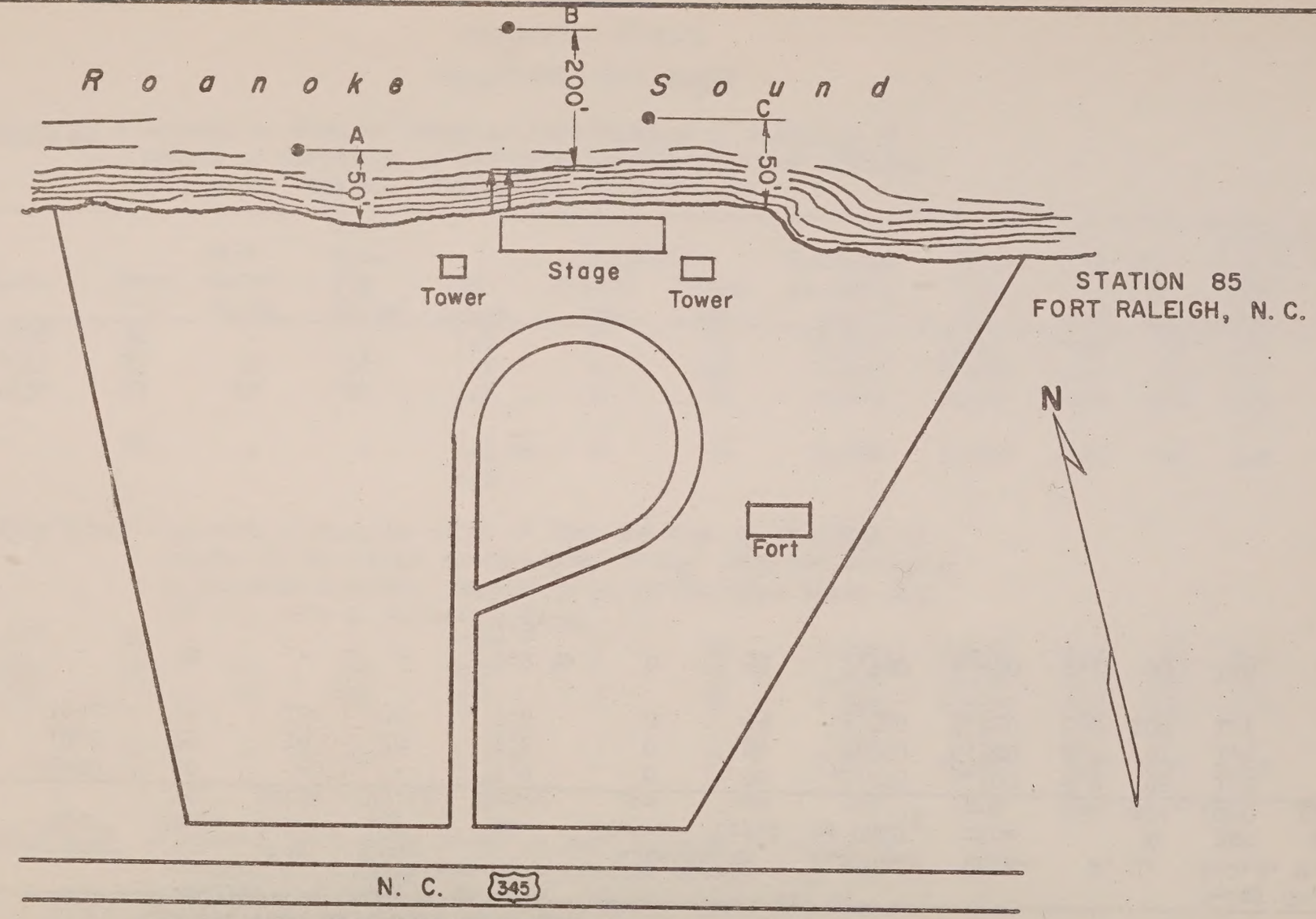
TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 85-C - Located on Roanoke Sound at Fort Raleigh in vicinity of points of discharge of untreated sewage from two outfalls at Seaside Theater. Sample taken 50 ft. from shore and 200 ft. east of center of stage.

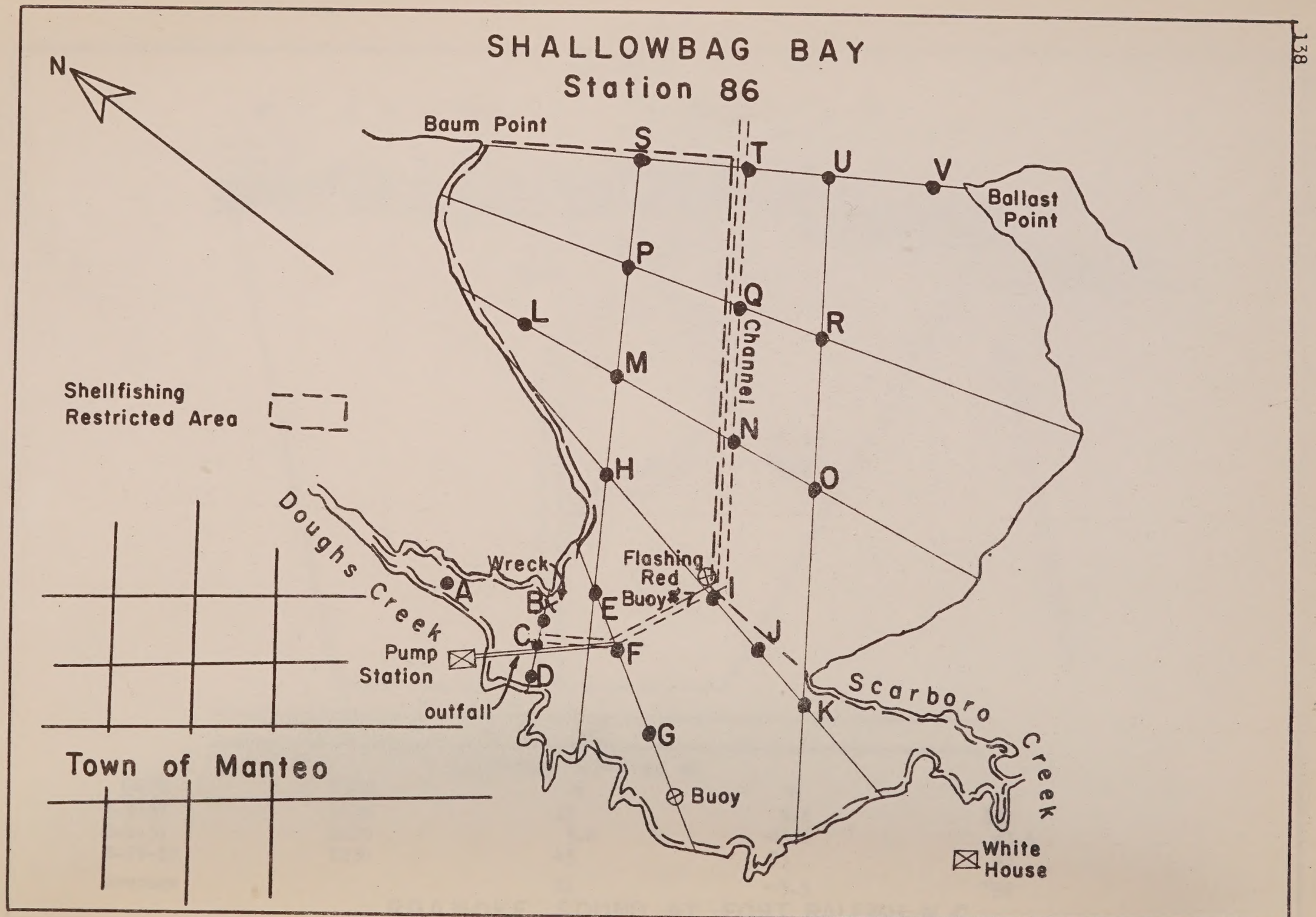
Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-9	T	1430	30	-	-	7.9	0	50	2,080	5,700	6.8	95	1.8	230
8-1	Th	1010	29	18	10	7.2	0	54	2,600	6,500	6.4	87	1.4	<3.6
8-27	T	1230	26	16	30	7.6	0	55	2,500	5,800	8.0	104	1.7	43
Average			28	-	-	7.2 to 7.9	0	53	2,390	6,000	7.1	95	1.6	<92



COLIFORM MPN/100 Ml.

DATE	TIME	A	B	C
7-9-57	1430	15	9.1	230
8-1-57	1010	3.6	<3.6	<3.6
8-27-57	1230	43	93	43
Average		21	<3.5	<92

ROANOKE SOUND AT FORT RALEIGH, N. C.


SHALLOWBAG BAY
Station 86
N
Baum Point
Ballast Point
Channel
Shellfishing Restricted Area
Doughs Creek
Wreck
Flashing Red Buoy #7
Pump Station
outfall
Scarboro Creek
Buoy
White House
Town of Manteo
S
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V
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STATION 86

SHALLOWBAG BAY ON ROANOKE SOUND AT MANTEO, N. C.

ANALYTICAL RESULTS

Date Collected 1957	Day	Time	Coliform M.P.N. per 100 ml. "A"	Coliform M.P.N. per 100 ml. "B"	Coliform M.P.N. per 100 ml. "C"	Coliform M.P.N. per 100 ml. "D"	Coliform M.P.N. per 100 ml. "E"	Coliform M.P.N. per 100 ml. "F"	Coliform M.P.N. per 100 ml. "G"	Coliform M.P.N. per 100 ml. "H"
7-12	F	0800	430	230	930	4,300	930	2,300	4,300	430
8-1	Th	1100	230	23	43	23	43	110,000	2,300	43
8-27	T	1415	230	230	430	4,300	430	430	43	3.6
9-25	W	1230	930	930	9,300	9,300	9,300	9,300	2,300	930
Average			460	350	2,700	4,500	2,700	31,000	2,200	350

Date Collected 1957	Day	Time	Coliform M.P.N. per 100 ml. "I"	Coliform M.P.N. per 100 ml. "J"	Coliform M.P.N. per 100 ml. "K"	Coliform M.P.N. per 100 ml. "L"	Coliform M.P.N. per 100 ml. "M"	Coliform M.P.N. per 100 ml. "N"	Coliform M.P.N. per 100 ml. "O"	Coliform M.P.N. per 100 ml. "P"
7-12	F	0800	21	4,300	930	-	-	-	-	-
8-1	Th	1100	23	9.1	43	23	23	9.1	9.1	3.6
8-27	T	1415	23	9.1	3.6	21	43	9.1	< 3.6	9.1
9-25	W	1230	930	930	430	230	430	930	930	230
Average			250	1,300	350	91	170	320	< 310	81

Date Collected 1957	Day	Time	Coliform M.P.N. per 100 ml. "Q"	Coliform M.P.N. per 100 ml. "R"	Coliform M.P.N. per 100 ml. "S"	Coliform M.P.N. per 100 ml. "T"	Coliform M.P.N. per 100 ml. "U"	Coliform M.P.N. per 100 ml. "V"
7-12	F	0800	-	-	-	-	-	-
8-1	Th	1100	43	3.6	< 3.6	< 3.6	15	3.6
8-27	T	1415	9.1	< 3.6	3.6	15	230	15
9-25	W	1230	930	93	23	43	230	9.1
Average			330	< 33	< 10	< 21	160	9.2

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 86-A - Located on Shallowbag Bay at Manteo to define condition of water in bay. See sketch on page 138 for location of sampling point.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-12	F	0800	28	18	6	7.3	0	59	1,350	6,600	6.2	84	1.8	430
8-1	Th	1100	31	16	10	7.4	0	90	5,080	14,000	5.3	82	2.4	230
8-27	T	1415	27	16	10	7.1	0	58	3,100	6,900	7.8	104	2.1	230
9-25	W	1230	22	24	20	7.8	0	63	5,000	6,700	7.5	91	1.8	930
Average			27	19	10	7.1 to 7.8	0	68	3,630	8,600	6.7	90	2.0	460

Station 86-C - Located on Shallowbag Bay to define conditions of water in Bay. See sketch on page 138 for location of sampling point.

7-12	F	0815	28	18	10	7.3	0	60	1,260	7,300	6.3	86	1.7	930
8-1	Th	1105	30	14	15	7.3	0	91	5,180	14,000	5.2	79	1.9	43
8-27	T	1415	27	21	15	7.3	0	52	3,400	6,200	7.9	104	2.0	430
9-25	W	1230	21	24	20	7.7	0	62	5,200	7,300	7.5	89	1.8	9,300
Average			27	19	15	7.3 to 7.7	0	66	3,760	8,700	6.7	90	1.9	2,700

Station 86-E - Located on Shallowbag Bay to define conditions of water in Bay. See sketch on page 138 for location of sampling point.

7-12	F	0825	28	21	6	7.2	0	58	1,290	6,900	6.3	85	2.2	930
8-1	Th	1115	31	16	5	7.4	0	89	5,000	13,000	5.6	86	2.2	43
8-27	T	1445	26	21	15	7.0	0	51	3,400	6,000	8.2	106	1.9	430
9-25	W	1230	21	26	20	7.7	0	60	4,300	6,800	7.6	90	1.5	9,300
Average			27	21	10	7.0 to 7.7	0	65	3,500	8,200	6.9	92	2.0	2,700

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 86-F - Located on Shallowbag Bay to define conditions of water in bay. See sketch on page 138 for location of sampling point.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-12	F	0830	28	18	5	7.3	0	61	1,250	7,900	6.3	86	1.8	2,300
8-1	Th	1120	30	16	5	7.3	0	92	5,120	14,000	5.1	78	2.7	110,000
8-27	T	1415	26	18	20	7.2	0	55	2,400	6,500	8.2	106	2.1	430
9-25	W	1230	21	26	20	7.8	0	63	4,400	7,500	7.4	89	2.2	9,300
Average			26	20	15	7.2 to 7.8	0	68	3,290	9,000	6.8	90	2.2	31,000

Station 86-I - Located on Shallowbag Bay to define conditions of water in bay. See page 138 for location of sampling point.

7-12	F	0845	28	18	10	7.3	0	63	1,410	7,900	6.2	85	1.8	21
8-1	Th	1130	30	18	8	7.4	0	90	5,000	12,000	5.9	88	1.8	23
8-27	T	1415	26	18	20	7.3	0	60	2,500	6,600	8.4	110	2.3	23
9-25	W	1230	21	24	15	7.6	0	58	4,000	6,700	7.5	89	1.8	930
Average			26	20	15	7.3 to 7.6	0	68	3,230	8,300	7.0	93	1.9	250

Station 87 - Located on Roanoke Sound at U.S. Hwy. 64 and 264 bridge to define condition of water in sound at Manteo. Average of three points.

7-12	F	1015	28	18	10	7.5	0	68	1,780	9,400	7.0	97	1.8	<3.6
8-1	Th	1255	30	18	7	7.5	0	89	4,760	14,000	6.4	97	1.6	11
8-28	W	0900	25	21	15	7.8	0	65	2,550	6,500	8.3	105	2.0	30
Average			28	19	10	7.5 to 7.8	0	74	3,030	10,000	7.2	100	1.8	<15

TABLE 6

ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 87-R - Located on Roanoke Sound to define condition of water in sound at Manteo. Sample taken at right quarter point. (West end of bridge)

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-12	F	1015	28	18	6	7.4	0	66	1,930	9,400	7.1	98	1.7	<3.6
8-1	Th	1255	30	16	10	7.5	0	85	4,640	15,000	6.3	97	1.5	3.6
8-28	W	0900	25	21	15	7.8	0	62	2,520	6,700	7.8	100	2.1	43
Average			28	18	10	7.4 to 7.8	0	71	3,030	10,000	7.1	98	1.8	<17

Station 87-M - Located on Roanoke Sound to define condition of water in sound at Manteo. Sample taken at center of bridge.

7-12	F	1015	28	18	15	7.5	0	67	1,780	10,000	7.0	98	1.8	<3.6
8-1	Th	1255	30	24	6	7.5	0	88	4,700	14,000	6.3	96	1.5	21
8-28	W	0900	25	21	8	7.9	0	65	2,480	6,600	8.5	109	2.0	43
Average			28	21	10	7.5 to 7.9	0	73	2,990	10,000	7.2	101	1.8	<23

Station 87-L - Located on Roanoke Sound to define condition of water in sound at Manteo. Sample taken at left quarter point. (East end of bridge)

7-12	F	1015	28	18	10	7.5	0	71	1,640	8,800	6.8	94	1.9	<3.6
8-1	Th	1255	31	14	6	7.6	0	94	4,940	14,000	6.5	101	1.9	9.1
8-28	W	0900	25	21	25	7.7	0	68	2,660	6,100	8.5	108	2.0	3.6
Average			28	18	15	7.5 to 7.7	0	78	3,080	9,600	7.3	101	1.9	<5.4

TABLE 6

ANALYTICAL RESULTS

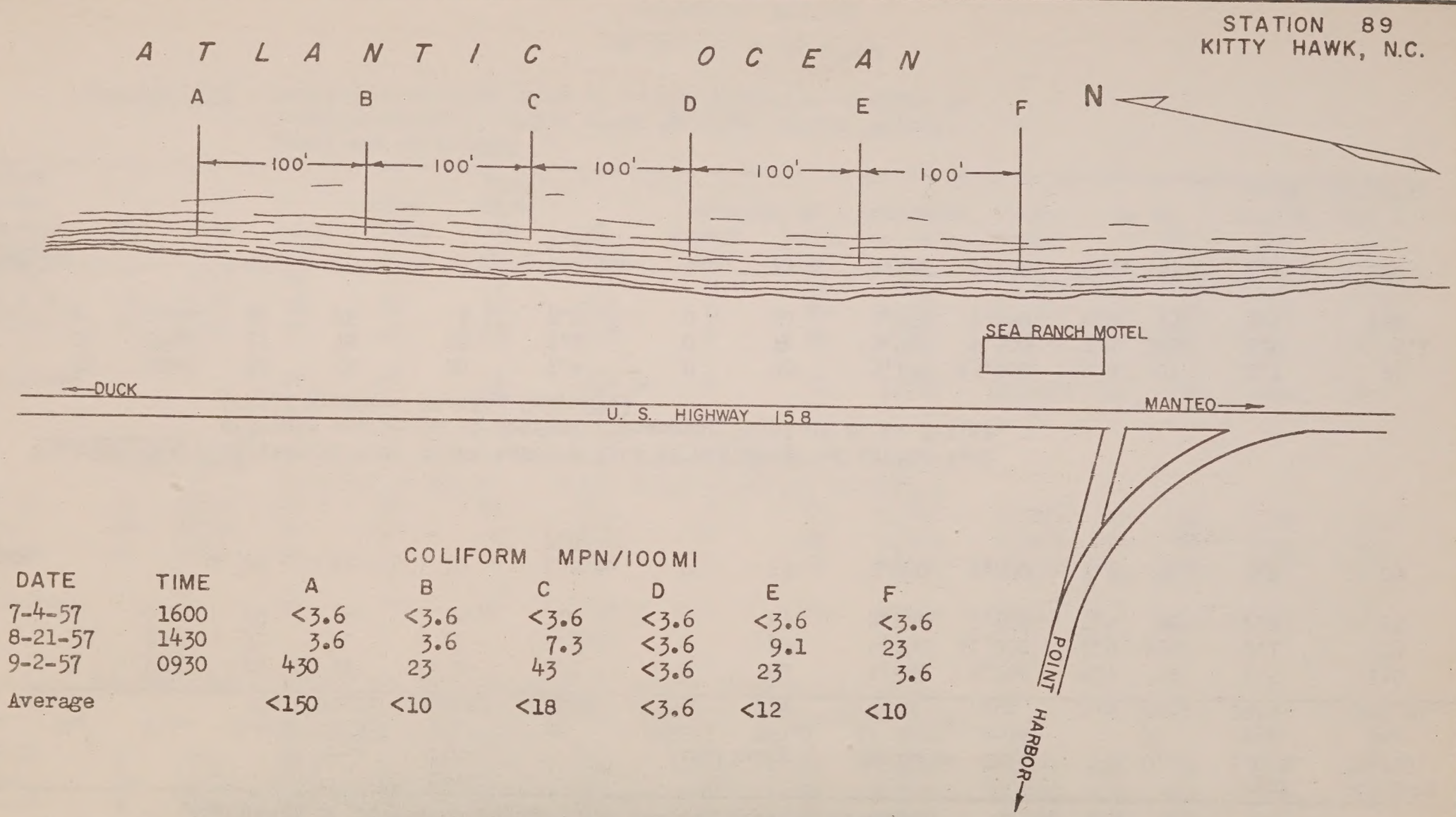
PASQUOTANK RIVER BASIN

Station 88 - Located on unnamed canal to Roanoke Sound below points of discharge of untreated sewage from several private outfalls.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-12	F	1100	28	21	6	7.3	0	66	1,560	9,200	5.7	79	4.5	150
8-1	Th	1245	31	21	10	7.5	0	92	4,540	11,000	6.9	104	2.1	23
8-28	W	0920	26	24	15	7.6	0	67	2,760	7,500	7.4	98	2.2	93
Average			28	22	10	7.3 to 7.6	0	75	2,950	9,200	6.7	94	2.9	89

Station 88-A - Located on Mill Creek below points of discharge of septic tank effluent and waste at Seafood Processing Plant of R. K. Tillet. (Chief Wanchese Packing Company.)

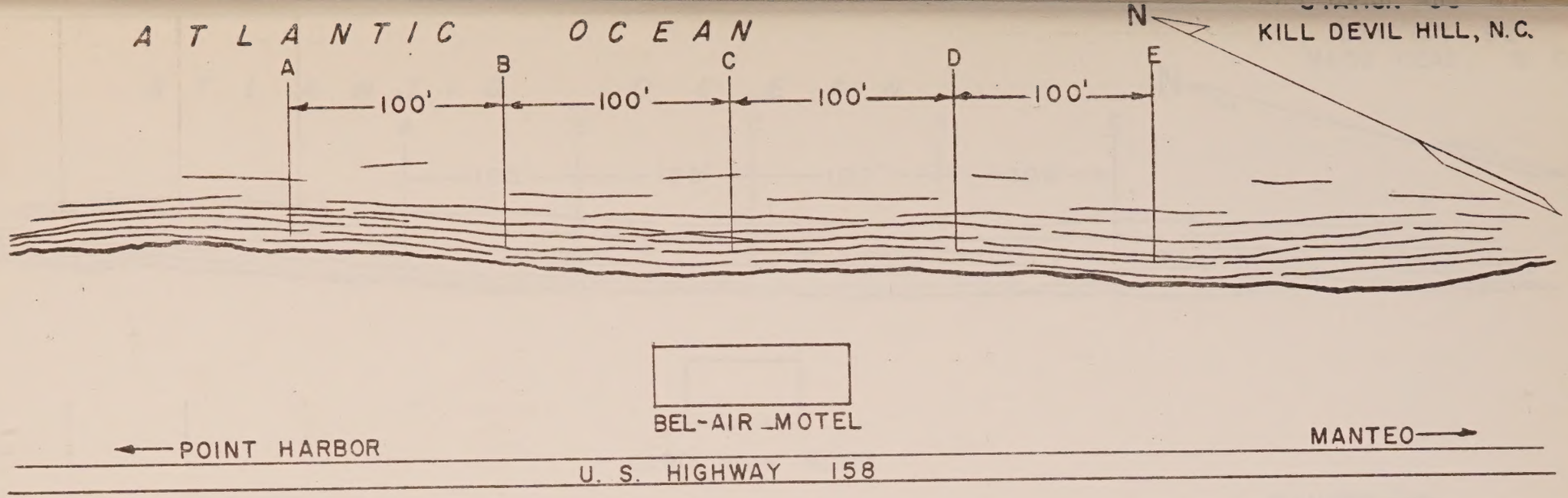
8-1	Th	0845	28	24	20	7.4	0	93	5,180	13,000	4.6	67	2.7	93
8-27	T	0900	27	18	25	7.2	0	71	3,900	9,300	7.4	101	2.1	9.1
10-8	T	1500	20	26	6	7.1	0	60	3,200	7,000	8.0	93	1.9	750
Average			25	23	15	7.1 to 7.4	0	75	4,090	9,800	6.7	87	2.2	280



COLIFORM MPN/100 ML

DATE	TIME	A	B	C	D	E	F
7-4-57	1600	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6
8-21-57	1430	3.6	3.6	7.3	<3.6	9.1	23
9-2-57	0930	430	23	43	<3.6	23	3.6
Average		<150	<10	<18	<3.6	<12	<10

ATLANTIC OCEAN AT SOUTHERN SHORES BEACH
KITTY HAWK, NORTH CAROLINA



DATE	TIME	COLIFORM MPN/100ML A	B	C	D	E
7-4-57	1530	<3.6	<3.6	<3.6	<3.6	<3.6
8-21-57	1425	<3.6	4?	<3.6	3.6	9.1
9-2-57	1030	9.1	<3.6	3.6	3.6	3.6
Average		<5.4	<17	<3.6	<3.6	<5.4

ATLANTIC OCEAN AT KILL DEVIL HILLS, N. C.

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TABLE 6

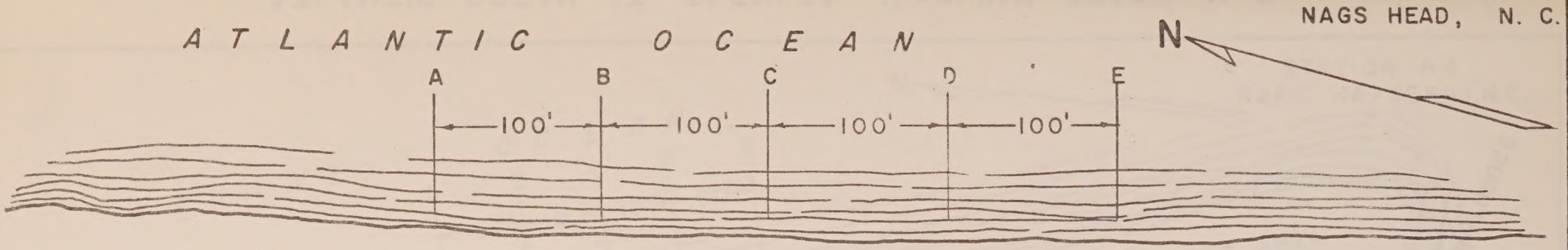
ANALYTICAL RESULTS

PASQUOTANK RIVER BASIN

Station 91 - Located on unnamed fresh water lake proposed as source of water supply for proposed Nags Head, Kill Devil Hill and Kitty Hawk Sanitary District.

Date Collected 1957	Day	Time	Temp. °C	True Color Units	Turbidity Units	pH Range	Alkalinity Phen. ppm	Alkalinity Tot. ppm	Hardness as $CaCO_3$ ppm	Chloride ppm	D. O. ppm	D. O. % Sat.	5-Day B.O.D. ppm 20°C	Colif. M.P.N. ppm 100 ml.	Iron ppm	Manganese ppm
7-4	Th	1500	25	11	6	7.6	0	8	57	30	8.1	97	2.4	<3.6	0.6	0
8-22	Th	0945	24	11	30	7.8	0	13	41	42	8.6	101	3.3	<3.6	0.5	0
9-2	M	1115	26	21	6	7.7	0	11	55	45	7.8	95	2.0	230	-	-
Average			25	14	15	7.6 to 7.8	0	11	51	39	8.2	98	2.6	<79	-	-

STATION 92
NAGS HEAD, N. C.



CAROLINIAN HOTEL

← POINT HARBOR

MANTEO →

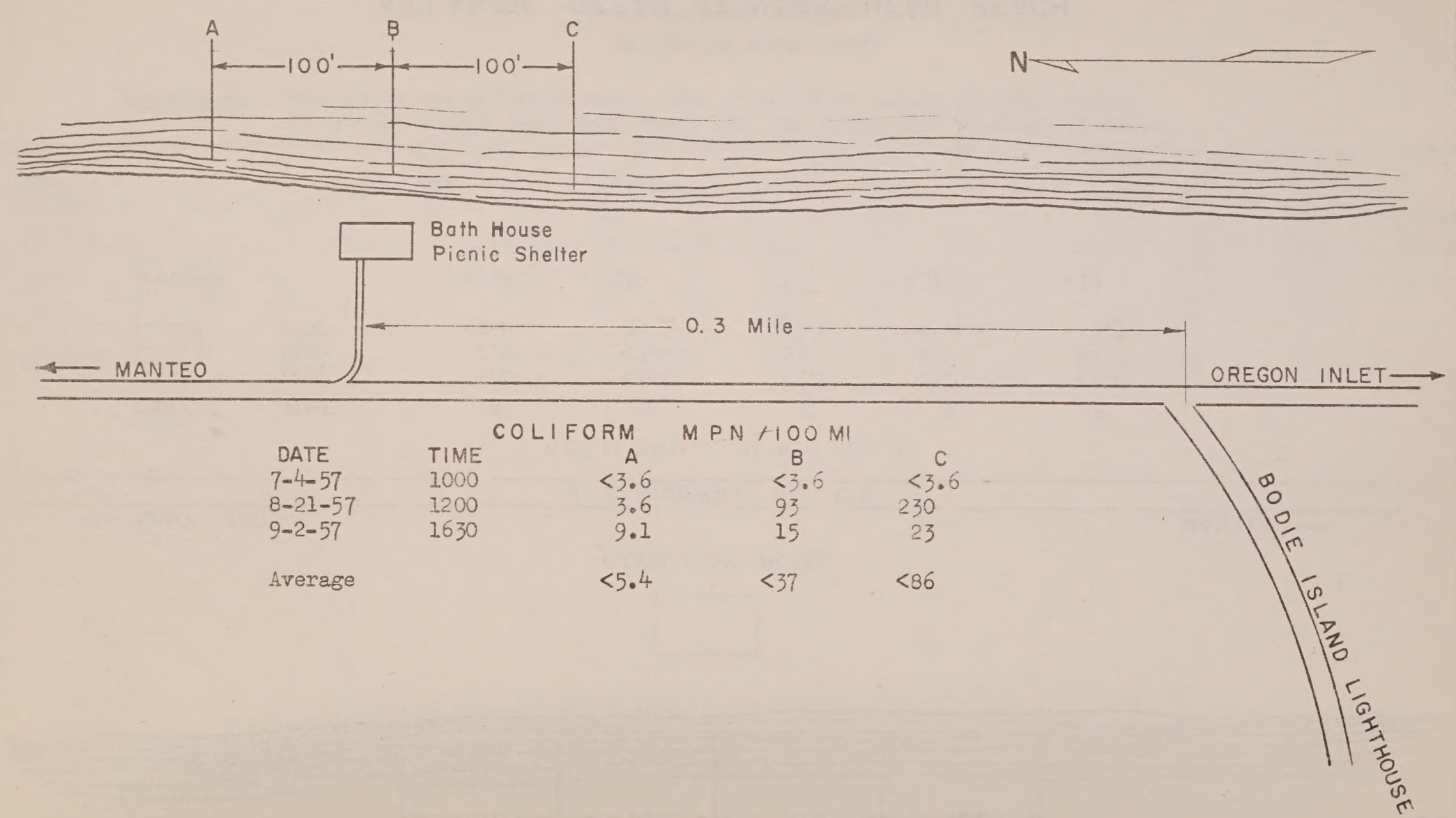
U. S. HIGHWAY NO. 158

COLIFORM M P N/100 MI

DATE	TIME	A	B	C	D	E
7-4-57	1230	<3.6	<3.6	<3.6	<3.6	<3.6
8-21-57	1320	9.1	<3.6	23	43	43
9-2-57	1200	<3.6	23	<3.6	<3.6	7.3
Average		<5.4	<10	<10	<17	<18

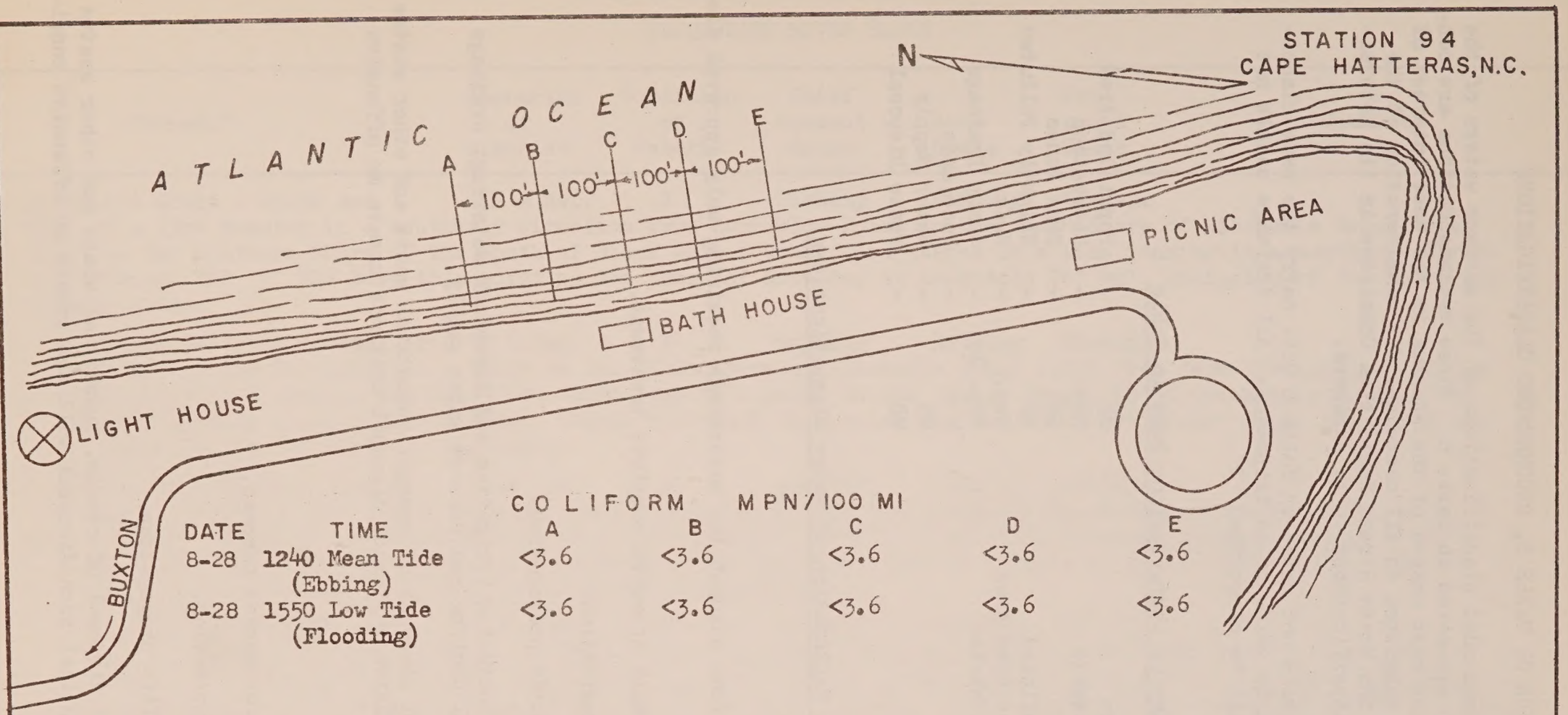
ATLANTIC OCEAN AT NAGS HEAD BEACH
NAGS HEAD, N. C.

STATION 93
GLENLEA BEACH, N.C.



DATE	TIME	COLIFORM MPN /100 ML A	B	C
7-4-57	1000	<3.6	<3.6	<3.6
8-21-57	1200	3.6	93	230
9-2-57	1630	9.1	15	23
Average		<5.4	<37	<86

ATLANTIC OCEAN AT GLENLEA (COQUINA) BEACH, N. C.



DATE	TIME	COLIFORM MPN/100 ML A	B	C	D	E
8-28	1240 Mean Tide (Ebbing)	<3.6	<3.6	<3.6	<3.6	<3.6
8-28	1550 Low Tide (Flooding)	<3.6	<3.6	<3.6	<3.6	<3.6

ATLANTIC OCEAN AT CAPE HATTERAS BEACH
CAPE HATTERAS, N. C.

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EXPLANATION OF TABLE 8, RECOMMENDED CLASSIFICATIONS

The tentative recommended classifications of the surface waters of the Pasquotank River Basin are given in Table 8. These recommendations are considered to represent the best usages of the streams in the best interest of the public. They are submitted to all concerned for consideration at the public hearing and to the State Stream Sanitation Committee in its determination of the final classifications to be assigned.

* Any natural stream not noted in Table 8 will carry the same classification as the stream to which it is tributary. All drainage canals not noted in this table will be classified "D".

Key To Abbreviations Used In Table

Agri.	-	Agriculture	PA	-	Populated Area
DS	-	Domestic Sewage	Rec.	-	Recreation
F	-	Farmlands	SD	-	Sand Dunes
GP	-	Grossly Polluted	SP	-	Slightly Polluted
HDA	-	Highly Developed Area	Swp.	-	Swamp
IW	-	Industrial Waste	Swp. Dr.	-	Swamp Drainage
M	-	Marsh	W	-	Woodlands
N	-	Natural	WS	-	Water Supply
P	-	Polluted	WD	-	Waste Disposal

Brief Explanation of Water Classifications

Fresh Surface Waters

A-I - Water supply from uninhabited watersheds requiring only approved disinfection.

A-II - Water supply with approved complete treatment.

B - Bathing and recreation.

C - Fish and Wildlife propagation.

D - Agriculture, including irrigation and livestock watering, drainage and industrial cooling and process water supply.

E - Navigation and disposal of sewage, industrial waste and other wastes with the provision that such disposal will not create an offensive condition.

Tidal Salt Waters

SA - Shellfishing for market purpose.

SB - Bathing and recreation.

SC - Fish and Wildlife propagation.

SD - Navigation and disposal of sewage, industrial waste and other wastes with provision that such disposal will not create an offensive condition.

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
I. Albemarle Sound - South and East of a line running in a southerly direction from Horniblow Point on the North Shore of Albemarle Sound to a point on the Southern Shore of the Mouth of Black Walnut Creek, and thence in a line running in a southerly direction through "N" "2" REF Buoy to a point on the Shore of Swan Bay at Longitude 76° 40', exclusive of the following bathing areas:	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
"1" Albemarle Beach Bathing Area - Within a line beginning at a point on the South Shore of Albemarle Sound 1,000 feet from the west end of the bathhouse and running due North for 1,000 feet to a point in the Sound; thence in an easterly direction for 2,000 feet to a point in the Sound; thence due south to a point on the Shore; and thence along the shore for 2,000 feet to the point of beginning.	W & Swp.	N	Bathing	Bathing	SB-Swp.	
"2" Sandy Point Beach Bathing Area - Within a line beginning at a point on the North Shore of Albemarle Sound 500 feet west of the N. C. Highway #32 bridge and running South for 1,000 feet to a point in the Sound; thence running east for 2,000 feet to a point in the Sound; thence running North for 1,000 feet to a point on the North Shore; and thence for 2,000 feet along the Shore to the point of beginning.	W & Swp.	N	Bathing	Bathing	SB-Swp.	
"3" Norman Smith Legion Beach and Colonial Beach Bathing Area - Within a line beginning at Bunton Point on the South Shore of Albemarle Sound and running due north for 3,500 feet to a point in the Sound; thence running east to a point of land approximately 1,000 feet northeast of Norman Smith Legion Beach; thence running along the shore to Mill Point; thence across the Mouth of Scuppernong River to dead-end county road; and thence along the South Shore of Albemarle Sound (Bull Bay) to the point of beginning.	WF & Swp.	N	Bathing	Bathing	SB-Swp.	
A. Currituck Sound to Mouth at Wright Memorial Bridge	WF & Marsh	N	Fishing	Fishing	SC-Swp.	
1. Knott Island Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
a. Capsies Creek	Marsh	N	Fishing	Fishing	SC-Swp.	
b. Porpoise Slough	Marsh	N	Fishing	Fishing	SC-Swp.	
2. North Landing River From Va.-N.C. Line to Mouth	WF & Marsh	N	Fishing	Fishing	SC-Swp.	
a. Gibbs Creek	Marsh	N	Fishing	Fishing	C-Swp.	
b. Northwest River From Va.-N.C. Line to Mouth	WF & Marsh	N	Fishing	Fishing	C-Swp.	
(1) Moyock Run to N.C. Hwy. #170	WF & Swp.	N	Agri.	Agri.	D-Swp.	Drainage from Moyock

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
(2) Moyock Run From N.C. Hwy. #170 to Mouth	WF & Swp.	N	Fishing	Fishing	C-Swp.	
(3) Peter Dozier Pond	WF & Swp.	N	Fishing	Fishing	C-Swp.	
(4) Nellie Bell Ponds	WF & Swp.	N	Fishing	Fishing	C-Swp.	
(5) Tull Bay	W & Swp.	N	Fishing	Fishing	C-Swp.	
(a) Tull Creek	Swp.	N	Fishing	Fishing	C-Swp.	
1 Rowland Creek Canal	Swp.	N	Fishing	Fishing	C-Swp.	
a Mill Run Canal and all Connecting Canals	Swp.	N	Drainage	Drainage	D-Swp.	
(b) Cowells Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
3. Bellows Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
4. Nigger Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
5. South Channel	Marsh	N	Fishing	Fishing	SC-Swp.	
6. Coinjock Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
a. Cedar Island Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
b. Piney Island Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
7. Ships Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
8. Raccoon Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
9. Whale Head Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
10. Parker Creek	Marsh	N	Fishing	Fishing	SC-Swp.	
11. Sanders Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
12. Wells Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
13. Beasley Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
14. Neals Creek	Marsh	N	Fishing	Fishing	SC-Swp.	
15. Poplar Branch Bay	Marsh	N	Fishing	Fishing	SC-Swp.	
16. Webster Creek	Marsh	N	Fishing	Fishing	SC-Swp.	
17. Hogquarter Creek	Marsh	N	Fishing	Fishing	SC-Swp.	
18. Sean Guite Creek	Marsh	N	Fishing	Fishing	SC-Swp.	

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Pro-posed Class	Comments
B. North River to Mouth (A straight line from Camden Point through FlR 4 Sec. "46" Buoy and C-47 Buoy to opposite Shore)	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
1. Indiantown Creek and interconnecting Canals to U. S. Hwy #158	WF & Swp.	N	Agri.	Agri.	D-Swp.	
a. Run Swamp Canal and all interconnecting Canals	WF & Swp.	N	Agri.	Agri.	D-Swp.	
2. Indiantown Creek from U. S. Hwy. #158 to Mouth	WF & Swp.	N	Fishing	Fishing	C-Swp.	
3. Bullfrog Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
4. East Creek	Swp.	N	Fishing	Fishing	C-Swp.	
5. Cow Creek	Swp.	N	Fishing	Fishing	C-Swp.	
6. Taylor Bay	Swp.	N	Fishing	Fishing	SC-Swp.	Interconnecting Canal between Coinjock Bay and North River
a. Intracoastal Waterway from Piney Island Bay to North River	Swp., PA	N	Fishing	Fishing	SC-Swp.	
b. Bump Landing Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
7. Narrow Bridge Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
8. Great Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
9. Deep Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
10. Goose Pond	Swp.	N	Fishing	Fishing	SC-Swp.	
11. Hunting Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
12. Lutz Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
13. Barnette Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
14. Duck Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
15. Broad Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
16. Little Broad Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Pro-posed Class	Comments
C. Pasquotank River to Norfolk-Southern Railroad Bridge	WF & Swp. & PA	N	Fishing	Fishing	C-Swp.	Intracoastal Waterway
1. Dismal Swamp Canal from N.C.-Va. State Line	WF & Swp.	N	Fishing	Fishing	C-Swp.	Intracoastal Waterway
a. Cross Canal	Swp.	N	Drainage	Drainage	D-Swp.	
(1) Hamburg Ditch	WF & Swp.	N	Agri.	Agri.	D-Swp.	
a Taylor Swamp	WF & Swp.	N	Agri.	Agri.	D-Swp.	
1 Jones Millpond	WF & Swp.	N	Agri.	Agri.	D-Swp.	
b Folly Swamp	WF & Swp.	N	Agri.	Agri.	D-Swp.	
c Goose Creek	WF & Swp.	N	Agri.	Agri.	D-Swp.	
d Jones Pond	WF & Swp.	N	Agri.	Agri.	D-Swp.	
(2) Southwest Ditch	Swp.	N	Drainage	Drainage	D-Swp.	
(3) Northwest Ditch	Swp.	N	Drainage	Drainage	D-Swp.	
a Reddick Ditch from N.C.-Va. State Line	Swp.	N	Drainage	Drainage	D-Swp.	
2. Newland Drainage Canal	WF & Swp.	N	Agri.	Agri.	D-Swp.	
3. Joyce Creek	WF & Swp.	N	Agri.	Agri.	D-Swp.	
4. Turners Cut	WF & Swp.	N	Fishing	Fishing	C-Swp.	Intracoastal Waterway
5. Sawyers Creek to County Road near Belcross	WF & Swp.	N	Agri.	Agri.	D-Swp.	
6. Sawyers Creek from County Road near Belcross to mouth	WF & Swp.	N	Fishing	Fishing	C-Swp.	
D. Pasquotank River from Norfolk-Southern Railroad Bridge to a line across the River from Hospital Point to Cobb Point	W & PA	P	WD	Fishing	SC-Swp.	Intracoastal Waterway & D.S. from Elizabeth City.
1. Knobbs Creek	WF & Swp & PA	P	Agri & WD	Agri.	D-Swp.	D.S. from Elizabeth City
a. Unnamed Tributary at Brothers Abattoir	W & Swp.	GP	WD	WD	E	Ind. waste from Brothers Abattoir
2. Poindexter Creek	Swp. & PA	GP	Drainage	Drainage	D-Swp.	Storm Drainage & D.S. from Elizabeth City.
3. Unnamed Ditch at McMorin Street	Swp. & PA	GP	Drainage	Drainage	D-Swp.	Storm Drainage & I.W. from Elizabeth City

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
4. Charles Creek	WF & Swp. & PA	P	Drainage	Agri.	D-Swp.	Storm Drainage & D.S. from Elizabeth City
E. Pasquotank River from a line across River from Hospital Point to Cobb Point to a line across River from Miller Point to Pool Point.	WF & Swp.	N	Drainage & Bathing	Bathing	SB-Swp.	D.S. & I.W. U. S. Coast Guard Air Facilities; Bathing at Treasure Point Beach, Taylors Beach and Elizabeth City Beach.
1. Areneuse Creek to N.C. Highway #343	WF & Swp.	N	Agri.	Agri.	D-Swp.	
2. Areneuse Creek from N.C. Highway #343 to mouth	WF & Swp. & PA	N	Bathing	Bathing	SB-Swp.	Bathing at Treasure Point Beach
a. Mill Dam Creek to N.C. Highway #343	WF & Swp.	N	Agri.	Agri.	D-Swp.	
b. Mill Dam Creek from N.C. Highway #343 to mouth	WF & Swp.	N	Agri.	Bathing	SB-Swp.	Bathing at Treasure Point Beach
3. Portohonk Creek and Connecting Canals	WF & Swp.	N	Agri.	Agri.	D-Swp.	
F. Pasquotank River from a line across river from Miller Point to Pool Point to Mouth (A straight line across river from Wade Point through Fl G 5 Sec "1" and Wade PT Fl 5 sec 23 ft. 9 M Buoys to Camden Point)	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
1. New Begun Creek to mouth of Wilson Creek	W PA & Swp.	N to SP	WD	Agri.	D-Swp.	
2. New Begun Creek from mouth of Wilson Creek to mouth	WF & Swp.	N to SP	Drainage	Fishing	SC-Swp.	
a. Wilson Creek	WF & Swp.	N	Agri.	Agri.	D-Swp.	
b. Pailin Creek	W PA & Swp.	P	WD	Agri.	D-Swp.	D.S. from U. S. Naval Air Facility
c. James Creek	WF & Swp.	N	Agri.	Agri.	D-Swp.	
3. Raymond Creek	WF & Swp.	N	Agri.	Agri.	D-Swp.	
4. Little Flatty Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
G. Big Flatty Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
1. Chapel Creek to paved County Road	WF & Swp.	N	Agri.	Agri.	D-Swp.	
2. Chapel Creek from paved County Road to mouth	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
3. Dam Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
4. Marsh Landing	Swp.	N	Fishing	Fishing	SC-Swp.	
5. Folly Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
H. Little River to mouth of Halls Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
I. Little River from mouth of Halls Creek to mouth (A straight line from Stevenson Point through C"1" Buoy to opposite Shore.)	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
1. Halls Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
2. Deep Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
3. Symond Creek to N.C. Hwy. 170	WF & Swp.	N	Agri.	Agri.	D-Swp.	
4. Symond Creek from N.C. Hwy. 170 to mouth	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
a. Unnamed tributary	WF & Swp.	N	Agri.	Agri.	D-Swp.	
J. Perquimans River to Norfolk-Southern Railroad Bridge near Hertford	WF & Swp.	N	Fishing	Fishing	C-Swp.	
1. Goodwins Mill Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
K. Perquimans River from Norfolk-Southern Railroad Bridge near Hertford to a line across river from Barrow Point to Ferry Point.	W PA & Swp.	N to P	Drainage	Fishing	SC-Swp.	D.S. and Storm Drainage from Hertford
1. Toms Creek	Swp.	GP	WD	Drainage	D-Swp.	D.S. from Hertford
2. Mill Creek to paved Windfall Road	WF & Swp.	N	Agri.	Agri.	D-Swp.	
3. Mill Creek from paved Windfall Road to mouth	W & Swp.	N	Fishing	Fishing	SC-Swp.	
4. Raccoon Creek to Harvy Neck Bridge	WF & Swp.	N to P	Drainage	Agri.	D-Swp.	
a. Jennies Gut and Gum Pond Run	PA	GP	WD	Agri.	D-Swp.	D.S. and Storm Drainage from Hertford Area

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
5. Raccoon Creek from Harvey Neck Bridge to mouth	Swp.	P	Drainage	Fishing	SC-Swp.	
L. Perquimans River from a line across river from Barrow Point to Ferry Point to Sound (Mouth-A straight line from Harvey Point to Opposite Shore at downstream side of mouth of Muddy Creek)	WF & Swp.	N	Bathing	Bathing	SB-Swp.	Hertford Beach, Southern Shores Beach, and Camp Perry
1. Sutton Creek to a point one mile above its mouth	WF & Swp.	N	Fishing	Fishing	C-Swp.	
2. Sutton Creek from a point one mile above its mouth to its mouth	W & Swp.	N	Fishing	Fishing	SC-Swp.	
3. Canaan Cove Creek to its narrows	WF & Swp.	N	Fishing	Fishing	C-Swp.	
4. Canaan Cove Creek from its narrows to its mouth	W & Swp.	N	Fishing	Fishing	SC-Swp.	
5. Muddy Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
M. Minns Creek	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
N. Yeopim River to mouth (A straight line from unnamed Island off Drummond Point to unnamed Island off point of land downstream from Yeopim Creek at dead-end road)	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
1. Burnt Mill Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
2. Middleton Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
3. Bethel Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
4. Yeopim Creek to a point two miles above its mouth	WF & Swp.	N	Fishing	Fishing	C-Swp.	
5. Yeopim Creek from a point two miles above its mouth to its mouth	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
O. Kendrick Creek to mouth of Bakers Swamp	WF & Swp.	SP	Agri.	Agri.	D-Swp	D.S. Roper High School and private outfalls
1. Beaver Dam Branch	WF & Swp.	N	Agri.	Agri.	D-Swp.	
a. Skinners Canal	WF & Swp.	N	Agri.	Agri.	D-Swp.	
2. Main Canal	WF & Swp.	N	Agri.	Agri.	D-Swp.	
a. Canal B	W & Swp.	N	Drainage	Drainage	D-Swp.	

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
b. Canal A		N	Drainage	Drainage	D-Swp.	
c. Lewis Canal	WF & Swp.	N	Agri.	Agri.	D-Swp.	
P. Kendrick Creek from mouth of Bakers Swamp to mouth	WF & Swp.	N to SP	Fishing	Fishing	SC-Swp.	
1. Bakers Swamp	WF & Swp.	N	Agri.	Agri.	D-Swp.	
Q. Pleasant Grove Creek	WF & Swp.	N	Agri.	Agri.	D-Swp.	
R. Chapel Swamp	WF & Swp.	N	Agri.	Agri.	D-Swp.	
S. Newberry Ditch	Swp.	N	Drainage	Drainage	D-Swp.	
T. Sleights Creek	Swp.	N	Drainage	Drainage	D-Swp.	
U. Bull Bay exclusive of Norman Smith Legion Beach and Colonial Beach Bathing Area described previously	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
1. Bull Creek	Swp.	N	Drainage	Drainage	D-Swp.	
2. Deep Creek	WF & Swp.	N	Agri.	Agri.	D-Swp.	
3. Bunton Creek	Swp.	N	Drainage	Drainage	D-Swp.	
4. Scuppernong River to mouth of Riders Creek (First Creek)	WF & Swp.	N	Fishing	Fishing	C-Swp.	
a. Moccasin Canal and connecting canals	WF & Swp.	N	Agri.	Agri.	D-Swp.	
b. Western Canal and connecting canals	WF & Swp.	N	Agri.	Agri.	D-Swp.	
c. Mountain Canal and connecting canals	WF & Swp.	N	Agri.	Agri.	D-Swp.	
d. Unnamed Canal at Creswell	F, Swp. & PA	P	WD	Agri.	D-Swp.	D.S. from Creswell High School
e. Thirty Foot Canal	WF & Swp.	N	Agri.	Agri.	D-Swp.	
f. Old Canal	WF & Swp.	N	Agri.	Agri.	D-Swp.	
(1) Phelps Lake	W & Swp.	N	Fishing	Fishing	C-Swp.	
(2) Bonarva Canal	WF & Swp.	N	Drainage	Drainage	D-Swp.	
g. Bee Tree Canal & connecting canals	WF & Swp.	N	Agri.	Agri.	D-Swp.	
h. Second Creek and connecting canals	WF & Swp.	N	Fishing	Fishing	C-Swp.	

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
5. Scuppernong River from mouth of Riders Creek (First Fl R 5 sec. Buoy to opposite Creek) to mouth (A straight line from Mill Point through Shore near end of dead-end road.	WF & Swp.	N to P	Fishing	Fishing	SC-Swp.	D.S. & I.W. from Columbia
a. Riders Creek and connecting canals	WF & Swp.	N	Fishing	Fishing	C-Swp.	
b. Bush Harrel Canal and connecting canals	PA Swp.	P	Drainage	Agri.	D-Swp.	Sewage Pump Station overflow at Columbia
V. Greys Canal and Connecting Canals	WF & Swp.	N	Agri.	Agri.	D-Swp.	
W. Alligator River to mouth of Northwest Fork	W & Swp.	N	Fishing	Fishing	C-Swp.	
1. Swindells Canal from Boundary Canal to Alligator River	W & Swp.	N	Drainage	Drainage	D-Swp.	
2. Florida Canal from Boundary Canal to Alligator River	W & Swp.	N	Drainage	Drainage	D-Swp.	
3. New Lake Fork	W & Swp.	N	Fishing	Fishing	C-Swp.	
a. New Lake	Swp.	N	Fishing	Fishing	C-Swp.	
4. Fairfield Canal from Boundary Canal to Alligator River	W & Swp.	N	Drainage	Drainage	D-Swp.	
5. Carters Canal	W & Swp.	N	Drainage	Drainage	D-Swp.	
X. Alligator River from mouth of Northwest Fork to mouth (A straight line from Long Shoal Point through RN "4" REF and C "3" Buoys to Sound Point on Durant Island.)	W & Swp.	N	Fishing	Fishing	SC-Swp.	
1. Northwest Fork	Swp.	N	Fishing	Fishing	C-Swp.	
a. Juniper Creek	Swp.	N	Drainage	Drainage	D-Swp.	
b. Southwest Fork	Swp.	N	Fishing	Fishing	C-Swp.	
2. Scouts Bay	Swp.	N	Fishing	Fishing	SC-Swp.	
3. Gum Neck Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
4. Georgia Bay	Swp.	N	Fishing	Fishing	SC-Swp.	
5. Intracoastal Waterway (Pungo River-Alligator River Canal from Currituck-Fairfield Township line to Alligator River.)	Swp.	N	Fishing	Fishing	SC-Swp.	

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
6. Winn Bay	Swp.	N	Fishing	Fishing	SC-Swp.	
7. Stumpy Creek Bay	Swp.	N	Fishing	Fishing	SC-Swp.	
a. Stumpy Creek	Swp.	N	Drainage	Drainage	D-Swp.	
8. Swan Creek	Swp.	N	Drainage	Drainage	D-Swp.	
a. Swan Creek Lake	Swp.	N	Fishing	Fishing	C-Swp.	
9. Whipping Creek	Swp.	N	Drainage	Drainage	D-Swp.	
a. Whipping Creek	Swp.	N	Fishing	Fishing	C-Swp.	
10. Grapevine Bay	Swp.	N	Fishing	Fishing	SC-Swp.	
a. Rattlesnake Bay	Swp.	N	Fishing	Fishing	SC-Swp.	
11. The Straits	Swp.	N	Fishing	Fishing	SC-Swp.	
a. The Frying Pan	Swp.	M	Fishing	Fishing	SC-Swp.	
(1) Coopers Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
(2) Basnight Canal	Swp.	N	Agri.	Agri.	D-Swp.	
(3) Babbitt Bay	Swp.	N	Fishing	Fishing	SC-Swp.	
12. Goose Creek	Swp.	N	Drainage	Drainage	D-Swp.	
13. Milltail Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
a. Boat Bay	Swp.	N	Fishing	Fishing	SC-Swp.	
b. Sandy Ridge Gut	Swp.	N	Drainage	Drainage	D-Swp.	
(1) Sawyer Lake	Swp.	N	Fishing	Fishing	C-Swp.	
14. Second Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
15. Little Alligator River	WF & Swp.	N	Fishing	Fishing	SC-Swp.	
a. Goose Pond	Swp.	N	Fishing	Fishing	SC-Swp.	
16. East Lake	W & Swp.	N	Fishing	Fishing	SC-Swp.	
a. The Frying Pan	Swp.	N	Fishing	Fishing	SC-Swp.	
b. South Lake	Swp.	N	Fishing	Fishing	SC-Swp.	
(1) Northeast Prong	W & Swp.	N	Fishing	Fishing	SC-Swp.	
(a) Liehue Gut	W & Swp.	N	Fishing	Fishing	SC-Swp.	
(2) Hooker Gut	W & Swp.	N	Fishing	Fishing	SC-Swp.	
(a) Billys Ditch	Swp.	N	Drainage	Drainage	D-Swp.	
(3) Deep Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
(4) Deep Bay	W & Swp.	N	Fishing	Fishing	SC-Swp.	
(5) Broad Creek	W & Swp.	N	Fishing	Fishing	SC-Swp.	

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
Y. Tom Mann Creek	Marsh	N	Fishing	Fishing	SC-Swp.	
Z. Peter Mashoes Creek	W & Marsh	N	Fishing	Fishing	SC-Swp.	
1. Gar Gut	Marsh	N	Fishing	Fishing	SC-Swp.	
a. Davis Pond	W & Marsh	N	Fishing	Fishing	SC-Swp.	
2. Spence Creek	W & Marsh	N	Fishing	Fishing	SC-Swp.	
a. Poster Gut	W & Marsh	N	Fishing	Fishing	SC-Swp.	
AA. Kitty Hawk Bay	W, Swp. & SD	N	Fishing	Fishing	SC-Swp.	
1. Colington Creek from Kill Devil Hills Bridge north to Kitty Hawk Bay	W, Marsh & SD	N	Fishing	Fishing	SC-Swp.	
BB. Buzzard Bay	W, Marsh & SD	N	Fishing	Fishing	SC-Swp.	
1. Colington Creek from Kill Devil Hills Bridge south to Buzzard Bay	W, Marsh & SD	N	Fishing	Fishing	SC-Swp.	
(Croatan Sound - that area bounded on north by a line running from a point of land on the southern side of mouth of Peter Mashoes Creek on Dare County mainland to Northwest Point on Roanoke Island, on south by a line running from a point of land just below Long Wretch Creek on Dare County mainland to the southern tip of Smith Island south of Roanoke Island, on west by Dare County mainland and on east by Roanoke Island)						
CC. Croatan Sound from a line running from a point of land on the southern side of mouth of Peter Mashoes Creek on Dare County mainland to Northwest Point on Roanoke Island to William B. Umstead Memorial Bridge.	W & Marsh	N	Fishing	Fishing	SC-Swp.	
DD. Croatan Sound from William B. Umstead Memorial Bridge to a line running from a point of land just below Long Wretch Creek on Dare County mainland to the southern tip of Smith Island south of Roanoke Island.	W & Marsh	N	Shell-fishing	Shell-fishing	SA-Swp.	
1. Unnamed Canal at Manns Harbor	W & Marsh	SP	Fishing	Fishing	SC-Swp.	D.S. and Drainage from Manns Harbor Area

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
2. Spencer Creek	W & Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
3. Callaghan Creek	W & Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
4. Baum Creek	W & Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
5. Oyster Creek	W & Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
6. Cedar Bush Bay	Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
7. Cut Through	Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
8. Hog Creek	Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
9. Long Wretch Creek	W & Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
10. Smith Creek	Marsh	N	Shellfishing	Shellfishing	SA-Swp.	
(Roanoke Sound - that area bounded on north by a line running from Northwest Point on Roanoke Island to Mann Point on Bodie Island, on south by a line running from southern tip of Smith Island south of Roanoke Island to southern tip of Bodie Island, on west by Roanoke Island, and on east by Bodie Island.)						
EE. Roanoke Sound from a line running from Northwest Point on Roanoke Island to Mann Point on Bodie Island to line running from Ballast Point through the northern tip of Nags Head Island to a point on Bodie Island.	W, Marsh & SD	N	Fishing	Fishing	SC-Swp.	
1. Otis Cove	W	N	Fishing	Fishing	SC-Swp.	
2. Shallowbag Bay	W, Marsh & PA	P	WD Fishing	Fishing	SC-Swp.	D.S. from Manteo
a. Scarboro Creek	W & Marsh	N	Fishing	Fishing	SC-Swp.	
b. Doughs Creek	W, Marsh & PA	P	Drainage	Fishing	SC-Swp.	Storm Drainage from Manteo
FF. Roanoke Sound from a line running from Ballast Point through the northern tip of Nags Head Island to a point on Bodie Island to a line running from the southern tip of Smith Island **south of Roanoke Island to southern tip of Bodie Island.**	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	

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RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
1. Pond Island - The waters surrounding the Island within 1,000 feet from shore.	Marsh & SD	SP	Fishing	Fishing	SC-Swp.	Local Contamination
2. Johns Creek	Marsh	N	Shell-fishing	Shell-fishing	SA-Swp.	
a. Sand Beach Creek	Marsh	N	Shell-fishing	Shell-fishing	SA-Swp.	
3. Rockhall Creek	Marsh	N	Shell-fishing	Shell-fishing	SA-Swp.	
4. Broad Creek	W & Marsh	N	Shell-fishing	Shell-fishing	SA-Swp.	
5. Mill Creek	W, Marsh & PA	SP	Drainage	Fishing	SC-Swp.	Storm Drainage and D.S. from Wanchese
6. Cut Through	Marsh	N	Shell-fishing	Shell-fishing	SA-Swp.	
7. Oyster Creek	Marsh	N	Shell-fishing	Shell-fishing	SA-Swp.	
8. Georges Creek	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
9. Lighthouse Bay	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
10. Blossie Creek	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
11. Motts Creek	Marsh & SD	N	Fishing	Fishing	SC-Swp.	
G. Pamlico Sound from Croatan and Roanoke Sounds to a line running from Sandy Point south of Stumpy Point Bay to the northeast tip of Ocracoke Island.	W, Swp., Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
1. Oregon Inlet	SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
2. Eagle Nest Bay	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	

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RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
3. Goat Island Bay	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
4. The Trench	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
5. Pea Island Creek	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
6. Pea Island Bay	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
7. Terrapin Creek Bay	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
a. Terrapin Creek	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
8. Stumpy Point Bay	W, Marsh & PA	SP	Shell-fishing	Shell-fishing	SA-Swp.	D.S. from Navy Station & Drainage from Stumpy Point
a. Black Lake Canal	W & Marsh	N	Drainage	Drainage	D-Swp.	
(1) Black Lake	Marsh	N	Fishing	Fishing	D-Swp.	
9. Beach Slue	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
10. Wreck Creek	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
11. Round Hammock Bay	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
12. Pauls Ditch	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
13. Blackmar Gut	Marsh, SD & PA	N	Shell-fishing	Shell-fishing	SA-Swp.	Drainage from Rodanthe
14. North Drain	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
15. Midgett Cove	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
16. Clarks Bay	Marsh & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	

TABLE 8

RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
17. No Ache Bay	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
18. Gull Island Bay	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
19. Phipps Cove	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
20. The Drain	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
21. Spencer Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
22. Mill Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
23. Peters Ditch	Marsh, SD & PA	N	Shellfishing	Shellfishing	SA-Swp.	Drainage from Avon.
24. Askins Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
25. Boat Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
26. Long Point Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
27. Cape Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
28. Brooks Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
29. Joe Saur Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
30. Sandy Bay	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
a. The Slash	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	Drainage from Hatteras Village
(1) Isaac Pond	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	

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RECOMMENDED CLASSIFICATIONS

PASQUOTANK RIVER BASIN

Streams*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
(2) Duck Ponds	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
31. Clubhouse Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
32. Goose Creek	Marsh & SD	N	Shellfishing	Shellfishing	SA-Swp.	
33. Hatteras Inlet	SD	N	Shellfishing	Shellfishing	SA-Swp.	
HH. Fresh Water Lake at Kill Devil Hills	W & SD	N	Fishing	W.S.	A-II	Proposed water supply for Nags Head-Kill Devil Hills-Kitty Hawk Sanitary District
II. Atlantic Ocean - The waters of the Atlantic Ocean contiguous to that portion of the Pasquotank River Basin that extends from the North Carolina-- Virginia State Line to the northeast tip of Ocracoke Island	SD	N	Recreation	Recreation	SB	

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